DUTCH NAVIES OF THE 80 YEARS' WAR 1568–1648
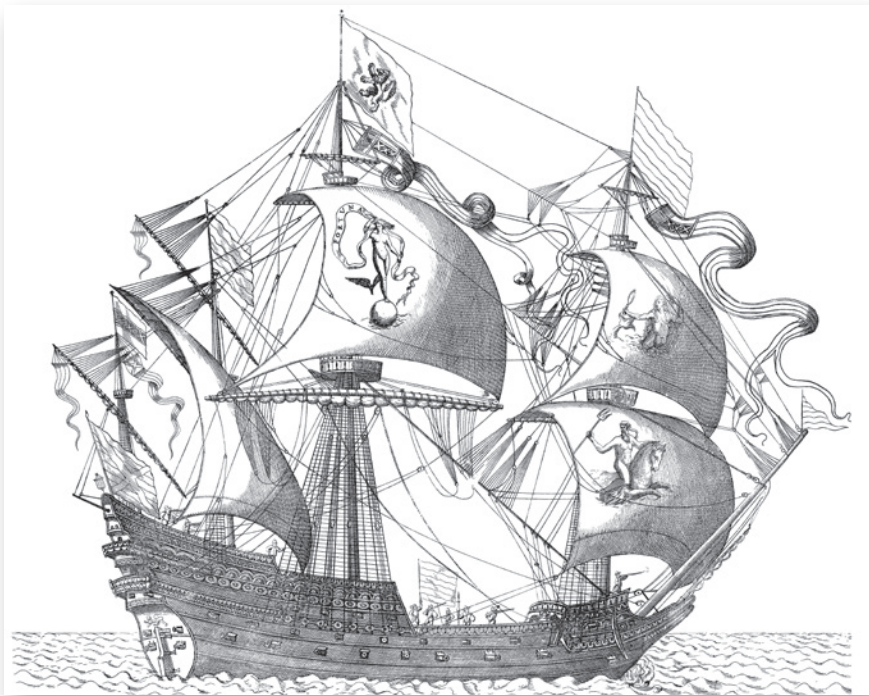
BOUKO DE GROOT

ILLUSTRATED BY PETER BULL

DUTCH NAVIES OF THE 80 YEARS' WAR 1568–1648

BOUKO DE GROOT   ILLUSTRATED BY PETER BULL

CONTENTS

DUTCH NAVIES OF THE 80 YEARS' WAR 1568–1648

INTRODUCTION

Fine study of the cruiser *Zeehond* (Seal) as it leaves Middelburg in 1615. It sometimes seems there were as many ship types as there were shipyards, usually sharing many characteristics. For the sake of clarity, this book will use only a handful of type designations. (Venne, 1615, RM)

The start of the 80 Years' War is traditionally set at the rebel army's victory at Heiligerlee in 1568. That battle, however, happened only because a planned landing in Holland was cancelled. Instead the army, massing in Germany, had to enter the Netherlands on foot. Four years and many raids later, on 1 April 1572, the rebels landed at Den Briel south-west of Rotterdam, captured it and fought off the Spanish counter-attacks. The Spanish governor famously exclaimed 'It's nothing!' But within weeks port cities across the country had joined the rebellion and the war had truly started. The decades-long struggle against the mighty worldwide Spanish Empire led to independence as the Republic of the Seven United Netherlands, or the United Provinces. The Dutch navy was essential to the success of the rebellion, the Republic's existence, and the new country's rapidly growing wealth and power.

In the 1560s, the Netherlands with its 17 provinces were part of the huge Spanish Empire, a legacy of the bigger-still Hapsburg Empire, whose leader Charles V had actually been born and raised in the Netherlands. His son, King Philip II of Spain, however, was born in Spain and ruled from Spain. During the 1560s he attempted to replace the existing Dutch decentralized government of local rulers with Spanish representatives. At the same time he ordered a hard and bloody repression of the increasing number of Protestants. When on top of that the Netherlands were hit by famine, riots and disobedience erupted. Philip hoped to quell the problems by sending an army paid with new, high taxes. Protestant nobles, citizens and peasants were banished, disowned or executed. The most senior noble among them was William, Prince of Orange, and Count of Nassau and many Dutch territories, later nicknamed 'The Silent'. He used most of his wealth to organize a resistance. When in February 1568 Philip II did the unthinkable and declared the whole population of the Netherlands – including the Catholics – heretic, and thus outlawed everyone, the rebels decided armed resistance was the only option left, and civil war started. Spain responded by massacring the populations of key cities, and ten of the 17 provinces gave up their resistance. The remaining seven declared their independence in 1581, led by William. After his
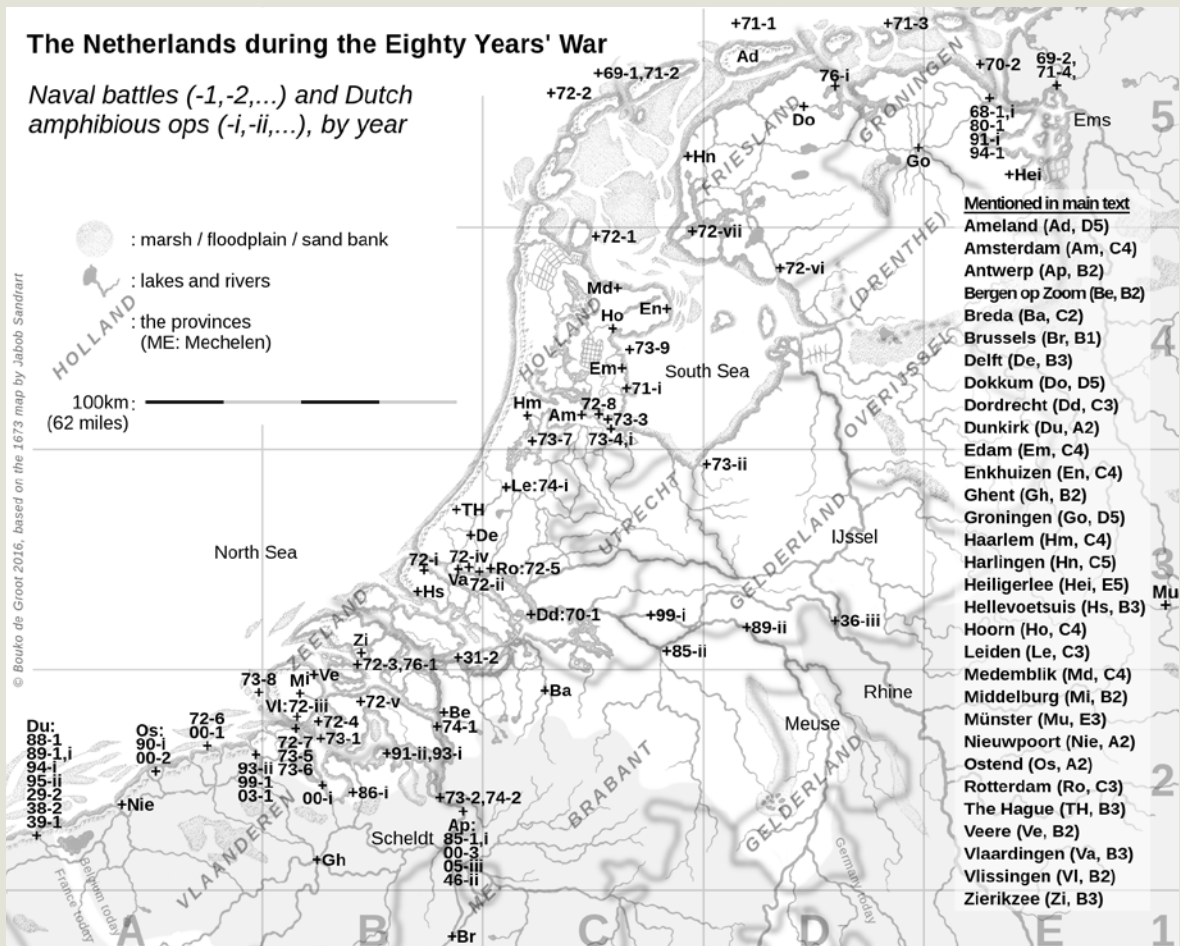
assassination in 1584 he was succeeded by his son Maurice. In 1588 the rebel provinces founded their republic and Maurice then reformed the army and revolutionized land warfare. This won true independence for the new country as recognized by France and England in 1596. His half-brother Frederick Henry succeeded him in 1625 and grew the young country into a real sovereign nation with its own court and international prestige, influence and power. His was the time when the Thirty Years' War engulfed the rest of Europe. Both the Netherlands and Spain joined international alliances and were heavily involved. When in 1648 the European war ended, the two also signed their peace treaty at Münster. During all that time the navy had been indispensable to winning, keeping and growing the new Republic.

CHRONOLOGY

Major events of the 80 Year's War and the more than 250 battles and notable actions at sea (Arabic numerals), and important Dutch amphibious actions (Roman numerals). Those outside Atlantic Europe mention the current country (Brazil is abbreviated to B, Dutch West Indies to D, Indonesia to I and Malaysia to M). Those in the Netherlands have coordinates and can be found on the map, with their year and number. Retiring embarkations – best known for the spectacular failure at Kallo in 1638, and regularly used by the sea-beggars – aren't included.

The Netherlands during the Eighty Years' War

Naval battles (-1,-2,...) and Dutch amphibious ops (-i,-ii,...), by year

© Bouko de Groot 2016, based on the 1673 map by Jabob Sandrart

: marsh / floodplain / sand bank

: lakes and rivers

: the provinces (ME: Mechelen)

100km : ——
(62 miles)

Mentioned in main text
Ameland (Ad, D5)
Amsterdam (Am, C4)
Antwerp (Ap, B2)
Bergen op Zoom (Be, B2)
Breda (Ba, C2)
Brussels (Br, B1)
Delft (De, B3)
Dokkum (Do, D5)
Dordrecht (Dd, C3)
Dunkirk (Du, A2)
Edam (Em, C4)
Enkhuizen (En, C4)
Ghent (Gh, B2)
Groningen (Go, D5)
Haarlem (Hm, C4)
Harlingen (Hn, C5)
Heiligerlee (Hei, E5)
Hellevoetsuis (Hs, B3)
Hoorn (Ho, C4)
Leiden (Le, C3)
Medemblik (Md, C4)
Middelburg (Mi, B2)
Münster (Mu, E3)
Nieuwpoort (Nie, A2)
Ostend (Os, A2)
Rotterdam (Ro, C3)
The Hague (TH, B3)
Veere (Ve, B2)
Vlaardingen (Va, B3)
Vlissingen (Vl, B2)
Zierikzee (Zi, B3)

Civil War, 1568–87

1566 Friction from famine, religious intolerance and bypassed local rulers between the Netherlands and their Lord (not king) King Philip II of Spain.

1567 Count of Alva (now spelled Alba) arrives with an army, to prosecute and execute 1,000, banish 11,000, confiscate their property, and raise taxes to unheard-of levels.

1568 The Netherlands declared heretic. Leading Catholic nobles, Counts of Egmont and Horne, executed in Brussels. Prince William of Orange escapes and organizes armed resistance. First rebel invasion fails. 1,i-Delfzijl (E5).

1569 1-Vlie (C5), 2-Emden (E5).

1570 Second rebel invasion falters. 1-Dordrecht (C3), 2-Eems (E5), 3-La Rochelle.

1571 Third invasion aborted, Den Briel part of plan, known to Alva. 1-Ameland twice (D5), 2-Vlie (C5), 3-Borkum (D5), 4-Emden (E5), 5-The Downs, i-Monnickendam (C4).

1572 Fourth rebel invasion, by land and sea: Den Briel taken and held. Alva massacres several cities. Spanish siege and massacre of Haarlem. Rebels start the siege of Middelburg. 1-Wieringen (C4), 2-Vlieland(C5), 3-Zierikzee (B3), 4-Sloe (B2), 5-Rotterdam (C3), 6-Blankenberge (A2), 7-Rammekens multiple (B2), 8-Nieuwendam twice (C4), i-Den Briel (B3), ii-Delfshaven (B3), iii-Vlissingen (Flushing, B2), iv-Vijfsluizen, v-Goes twice (Tergoes, B2), vi-Kuinre (D4), vii-Koudum (C4).

1573 Failed Spanish siege of Alkmaar. 1-Walcheren twice (B2), 2-Lillo twice (B2), 3-Durgerdam (C4), 4-Diemerdike multiple (C4), 5-Vlissingen (Flushing, B2), 6-Rammekens (aka Borsele, B2), 7-Haarlem Lake twice (C4), 8-Zoutelande (A2), 9-Zuiderzee (Hoorn, C4), i-Diemerdike twice (C4), ii-Nijkerk (D3).

1574 Spanish siege of Leiden defeated by a large rebel fleet across inundated lands. First Spanish Armada falters. Middelburg falls to rebels. 1-Bergen op Zoom (aka Reimerswaal aka Roemerswaal aka Scheldt, B2), 2-Lillo (B2), i-Leiden (C3).

1576 Spanish Fury: unpaid Spanish soldiers sack major cities. It alienates loyalists and leads to the temporary Pacification of Ghent. 1-Zierikzee multiple (B3), i-Oostmahorn (D5).

1578 Amsterdam finally joins the rebel cause. It is used to arrest and execute any suspected rebel, earning it the nickname Murderdam.

1579 After Spain starts hostilities again, southern territories join it and form the Union of Atrecht (Arras). Northern territories then form the Union of Utrecht.

1580 Betrayal of governor Rennenberg: he brings Spain Henegouwen (Hainault) and the coastal province Groningen. Spain gains Portugal and its colonies. 1-Delfzijl (E5).

1581 **Declaration of Independence** by the seven northern provinces.

1584 **William the Silent assassinated** on orders of Philip II.

1585 Spanish siege of Antwerp succeeds. 1,i-Antwerp both twice (B2), ii-Bommelerwaard (Empel, C3).

1586 **Maurice succeeds William the Silent**. i-Axel (B2).

War for Independence, 1588–1620

1588 Second Spanish Armada. **Birth of the Republic of the United Provinces** with the publication of the Justification, i.e. government should be exercised by the States General, not by an individual. 1-Dunkirk (A2), 2-Spanish Armada.

1589 First joint expedition against Spain, with England. 1-Dunkirk (A2), i-A Coruña, ii-Nijmegen (D3).

1590 i-Ostend (A2).

1591 i-Delfzijl (E5), ii-Walsoorden (B2).

1593 i-Walsoorden (B2), ii-Sluis (A2).

1594 Spain loses control of coastal province Groningen. 1-Delfzijl (E5), 2-Calais, i-Dunkirk (A2).

1595 First major army exercises of Maurice's new model army which revolutionized land warfare. i-Elmina (Ghana), ii-Dunkirk (A2).

1596 Spain takes Calais, another armada fails. Republic recognized by England and France in the Triple Alliance. 1-Cadiz, 2-Bantam twice (I).

1597 Definitive navy structure: 5 admiralties. 1-Azores.

1598 1-Bantam (I), i-Príncipe, ii-Annobon (Equatorial Guinea).

1599 First independent expedition against Spain. Trade with Spain forbidden. 1-Sluis (A2), i-Zaltbommel (C3), ii-A Coruña, iii-Las Palmas, iv-La Gomera, v-São Tomé, vi-Rio de Janeiro (B).

1600 Massive republican landing at Philippine leads to the vital victory at Nieuwpoort, which establishes the Republic and Maurice on the international scene. 1-Blankenberge (A2), 2-Ostend (A2), 3-Antwerp (B2), i-Philippine (B2), ii-Ambon (I).

1601 Spanish siege of Ostend starts. At Bantam, Portugal loses its pepper monopoly when Admiral Harmenz wins the first combat between two lines-of-battle. 1-Tidore (I), 2-Bantam (I), i-Ambon (I).

1602 East Indies Company or VOC founded. 1-Portugal, coast, 2-Grevelingen (Gravelines aka Narrow Seas aka Dover Strait).

1603 1-Sluis (A2), 2-Portuguese coast, 3-Malacca Strait, 4-Baticaloa (Sri Lanka), 5-Johor (M), 6-Patani (M).

1604 Ostend, the last republican port in the southern Netherlands, falls to Spain. 1-Madeira & La Gomera, 2-Malacca Strait, 3-Island of Mozambique (Mozambique), 4-Calicut (India), i-All Saints' Bay (B).

1605 1-Araya (Venezuela), i-Ambon (I), ii-Tidore (I), iii-Antwerp (B2).

1606	1-Lisbon, 2-Cuba, 3-Karimanal (Pulecat, India), 4-Cape Rachado (M), 5-Cape St. Vincent, 6-Malacca (M), i-Ternate twice (I), ii-Malacca (M).
1607	1-Gibraltar, 2-Goa (India), i-Ternate (I).
1608	1-Island of Mozambique (Mozambique), i-Makian (I), ii-Morotai (I).
1609	**Commencement of the 12 Years' Truce**. 1-Tidore (I), i-Neira (I).
1610	1-Playa Honda (Botolan, Philippines).
1615	1-San Vicente de Cañete (Peru), 2-Malacca (M), i-Paita (Peru), ii-Ai (I), iii-Salagua (Mexico).
1616	i-Ai (I).
1617	1-Playa Honda (Botolan, Philippines), 2-Banda (I).
1618	**Outbreak of the 30 Years' War.** Separatist tensions in the Republic. Local ruler with English help besieges VOC at Jakarta, held by 250 Dutch, who rename it Batavia. 1-Gibraltar twice, 2-Algiers (Algeria), 3-Batavia (Jakarta, I), i-Lontor (I), ii-Ambon (I).
1619	VOC governor relieves Batavia, now the undisputed seat of VOC power in Asia. 1-Sumatra (I), i-Jepara (I), ii-Batavia (Jakarta, I).

Coalition War, 1621–48

1621	**End of the 12 Years' Truce.** West Indies Company or WIC founded. 1-Indian Ocean, 2-Gibraltar, i-Lontor (I).
1622	1-Island of Mozambique (Mozambique), 1-Lontor (I), 2-Gibraltar (aka Fuengirola), i-Araya (Venezuela), ii-Macao (China), iii-Pescadores.
1623	1-Spanish coast, i-Gulangyu (China), ii-Amoy (Xiamen, China).
1624	1-Playa Honda (Botolan, Philippines), 2,iv-Calleo multiple (Peru), 3-Luanda (Angola), i-Yucatan (Mexico), ii-Espirito Santo (B), iii-Salvador de Bahia (B), v-Pisco (Peru), vi-Guyaquil (Ecuador), vii-Chorrillos (Peru).
1625	**Death of Maurice, succeeded by Frederick Henry**. 1-Hormuz Strait, 2-Bay of Bengal, 3-La Rochelle twice, 4-Shetland Islands, i-Hoamohal (I), ii-Salvador de Bahia (B), iii-Seram (I), iv-San Juan (Puerto Rico), v-Elmina (Ghana).
1626	Start of standing navy with the employment of 60 permanent captains.
1627	1-All Saints' Bay twice (B).
1628	Piet Hein captures the only Spanish treasure fleet ever taken. 1-Havana twice (Cuba), 2-Bay of Matanzas (Cuba), 3-Batavia (Jakarta, I).
1629	Siege of 's-Hertogenbosch, the last major river city in Spanish hands, funded by the treasure fleet's silver. 1-Azores, 2-Dunkirk (A2), i-Flores & Larantuka (I).
1630	1-Taiwan Strait, 2-Malacca Strait, i-St. Maarten (D), ii-Olinda (B).

1631	Third Spanish Armada. 1-Jepara (I), 2-Slaak (B3), 3-Albrolhos (B).
1633	1-Xiamen twice (China).
1634	Offensive & defensive alliance with France. 1-Makassar (I), i-Curaçao (D), ii-Hoamohal (I).
1636	1-Dieppe, i-Lamay, ii-Solor (I), iii-Schenkenschans (D3), iv-Aruba & Bonaire (D).
1637	1-Goa (India), 2-Malacca (M), 3-Banjarmasin (I), 4-Lizard Point, i-Hoamohal multiple (I), ii-Elmina (Ghana).
1638	The first T is crossed when Admiral Jol's line of battle cuts the Spanish line near Havana (Cuba). 1-Goa (India), 2-Dunkirk (A2), 3-Cuba, i-Baticaloa (Sri Lanka).
1639	Fourth Spanish Armada. 1-Dunkirk (A2), 2-Goa (India), 3-Beachy Head, 4-The Downs, i-Trincomalee (Sri Lanka).
1640	Fifth Spanish Armada, in Brazil. 1-Itacamara (B), i-Negombo (Sri Lanka), ii-Galle (Sri Lanka), iii-Malacca (M).
1641	1-Cadiz, 2-Cape St. Vincent, 3-Galle (Sri Lanka), i-Luanda (Angola), ii-São Tomé.
1642	1-Palembang (I), i-Nagapatnam (Sri Lanka), ii-Keelung (Taiwan), iii-Axim (Ghana).
1643	1-Gulf of Tonkin (Vietnam), 2-North Sea, i-Ambon (I), ii-Valdiva (Chile).
1644	Privately funded navy supports Sweden. 1-Phnom Penh (Cambodia), 2,ii-Grevelingen (Gravelines), 3-Silt twice, 4-Gothenburg, 5-The Sound twice, 6-Fehmarn (aka Femern), i-Negombo (Sri Lanka), iii-St. Maarten (D).
1645	1-The Sound, i-Bandar Abbas (Iran).
1646	1-Manila Bay (Philippines) multiple, 2-Grevelingen (Gravelines), i-Ambon (I), ii-Antwerp (B2).
1647	**Death of Fredrick Henry, succeeded by William II**. 1-Manila Bay (Philippines), i-Itaparica (B).
1648	**Peace of Münster** and Peace of Westphalia end the 80 Years' War and the Thirty Years' Wars, respectively. 1-Salvador de Bahia (B).

CIVIL WAR, 1568–87

The chaos of the civil war attracted growing numbers of pirates from abroad. More dangerous to those loyal to Spain were the less numerous but better organized 'sea-beggars', the disowned Protestants who had taken to the sea, first as pirates, then as privateers. They organized themselves into fleets to ambush loyalist merchant convoys or to transport invasion armies. The loyalists responded by building their own fleets. This 1570s arms race resulted in warships of up to 1,200dwt, and rebel control of the sea. Most of the war was fought on land though and both navies were mainly used in support of sieges, regularly proving decisive (e.g. Haarlem, Leiden, Middelburg, Walcheren, Zierikzee). Many cities tried to protect themselves against sieges by inundating the surrounding land, thereby creating a new kind of arena, but here too the rebels gained the upper hand, with fleets of very shallow-draft vessels, less than 2ft (60cm).

The temporary peace of 1576 brought a lull to naval activities; Spain had lost almost all ports in the Netherlands. In the confusion after William the Silent's 1584 assassination, Spain managed to regain most of its former Flemish ports from where it immediately organized a navy to disrupt Dutch fishing and trade. In 1585 the rebels signed the Treaty of Nonsuch with England. It obliged them to support England with 20 warships if asked, which it did, to repel the Spanish Armada. Unfortunately, and despite many plans, the rebel fleet no longer had a sufficient number of proper warships – at least 200dwt, according to the English – to answer either call. It wasn't until the next decade that a new building programme finally commenced.

Organization

The Netherlands was a union of autonomous provinces. Each coastal province thus had its own navy, admiralty board and arsenal: Zeeland's, for example, was in Veere, Holland's in Delft. These weren't big: when a warfleet had to be equipped, guns needed to be borrowed from city arsenals. Before the rebels controlled any Dutch ports, William the Silent sent an envoy to England to assemble a fleet of big warships, in 1568 and again in 1569. That same year he started to sign letters of marque to grant the sea-beggars an official status. In the summer of 1570 a first admiral of all ships was appointed, and the first uniform regulations were issued to captains and crews. Neutral ships were not to be attacked for instance, so as not to lose foreign support. After major coastal cities had declared for the rebel cause in 1572, William was appointed sovereign-admiral. The rebel fleet quickly shed its bad apples and developed into a proper fleet. In 1576, for example, Holland and Zeeland decided to create a combined fleet of 100 ships. The attempt to centralize navy control failed, however, but at least the different admiralties started to convene regularly. The decentralized organization did

Beautiful but fictitious representation of the battle of the Zuiderzee near Hoorn, on 11 October 1573. The loyalist fleet of Amsterdam aimed to destroy the rebel fleet of the Northern Quarter. The Spanish governor and admiral of Holland had built an unsinkable ship expressly for this purpose, the double-hulled, double-keeled *Inquisition*, with 32 guns, 180 crew and 400 Spanish marines. When the fleets engaged, three rebel vessels boarded it and only barely managed to hang on. Then the unsinkable ship got stuck on a sandbank, and a rebel ship's mate managed to take down its flag. Disheartened, the loyalist fleet retired back to Amsterdam. Below decks on the flagship, the admiral and his men fought on. The rebels just kept shipping in fresh troops, however. After another 24 hours of non-stop shipboard fighting, the exhausted loyalists surrendered. (Blanckerhoff, 1663, RM)

have advantages: all elements of each fleet – decision-makers, arsenals, ships, victuals – were close together, so once a decision was made, execution was swift. This is exactly why, when the rebels suffered several setbacks off northern Holland in 1573, a new admiralty was created there, in Hoorn, better to cope with the local challenge, the still loyalist city of Amsterdam.

Below the overall commander, who never went out to sea, were the lieutenant-admirals. These were the provincial navy commanders and they did go to war with their fleet. They in turn were seconded by one or more vice-admirals. In the early years, several cities employed their own admirals as well. To finance their ships and operations, the admiralties charged export duties, received shares from privateers, and were paid to escort commercial convoys. Convoys were an old and tried method for merchants and fishermen to stay safe, going back at least to the fourteenth century. Some of these were so big that they created their own little navies to protect them. In 1567, for example, the herring fleet organized its own escorts so it didn't have to depend on outsiders any more (a remarkable number of pirates focused on fishermen, not merchants).

Ships

Like most navies in the region, the rebels' too consisted primarily of refitted merchants, as it had been for centuries. Unlike its maritime neighbours though, the number of purebred warships was insignificant. Before the war, the government's policy had been to build warships only when they were really needed, and then only as few as possible. In 1561 the last war fleet before the war, built in 1550, was sold off. The largest of its ten ships was the *Valk* (Falcon), with 73 guns up to 24-pdr. Merchant and navy ships were built without drawings or fixed specifications; instead, like medieval craftsmen, Dutch shipbuilders trusted their personal experience to interpret plans and descriptions properly.

Before the war, the central government had tried several times to create a fleet of big square-rigged warships with two decks and a protection net. The province of Holland successfully opposed these developments, warning it would bankrupt the industry. Nevertheless, big ships were needed in times of war. In 1568 and 1569 William the Silent sent a representative to England to buy and rent a small fleet of big vessels. These were used in the fight for

Swivel breechloaders (*draaibas* or *steenstuk*) were the smallest-calibre gun and used throughout the war on vessels of all sizes, primarily as anti-personnel weapons. Easy to stow, they were the gun of choice for small craft. In 1630, for example, the Friesland Admiralty operated many small 20dwt, 10-man boats, each with four of these guns. In 1599 the navy was ordered to send its sailors in boats like these to the Bommelerwaard. At the rear this type of gun has a space for a separate mug-shaped pre-loaded container for the ammunition. A wedge then held it in place. (Wieringen, 1622, SM)

In January 1574, the Spanish governor of the Netherlands, Luis de Requesens of Lepanto fame, had to reinforce the Spanish army besieged in Middelburg. He sent eight large square-rigged and 40 spritsailed warships from Antwerp to Flushing, where the rebel leader, Prince William of Orange was staying. Another 54 spritsails would escort 29 transports from Bergen op Zoom; that flagship carried 150 men and ten guns. His opponent, Lieutenant-Admiral of Holland and Zeeland Louis de Boisot, had concentrated 64 mostly spritsailed warships against Bergen op Zoom, leaving perhaps a dozen ships in Flushing. On 29 January the rebels attacked. The loyalists formed a defensive line of battle and caused massive casualties with their point-blank salvo. The rebels charged home nonetheless and boarded, 2-vs-1. Both flagships were lost in fire. The loyalists were forced back, some ran aground, and ten were taken. Seeing this, the transports retired to Bergen op Zoom. Without reinforcements, Middelburg surrendered three weeks later. (Spierinck, Vroom, 1595, ZM)

Groningen, but no specifications are known; it is probable that they were refitted merchants. In 1576 Zeeland added muscle to its fleet with several old, refitted merchants that were used during the sieges of Middelburg and Zierikzee. The biggest of these was the ill-fated flagship, in which Admiral Louis de Boisot was killed, a 1,200dwt giant with square-rigged fore- and mainmast, lateen-rigged mizzenmast and perhaps bonaventure, probably without gallery, 'well provided with guns' (perhaps 20 plus many more smaller swivel guns), and big enough to carry more than 500 men for an amphibious assault, with a keel length of perhaps 120–150ft (40–50m) and a beam of 40–50ft (13–16m). Truly big ships like these were exceptions though. By the time of the Spanish Armada, of the 100 ships the combined admiralties had ready, only 2 per cent were bigger than 200dwt, compared to 60 per cent in the Spanish fleet, and 22 per cent in the English.

In the middle of the sixteenth century the Dutch merchant fleet had grown exponentially, thanks to the introduction of the spritsail on smaller sea-going ships. These 80–120dwt ships could enter most inland ports thanks to their shallow draft. The spritsail required just a small crew to operate and could be used with any wind direction, making the ships more economical and manoeuvrable. From the 1570s the flat stern was popular in Holland. Easier to build than the traditional stern, it added another cost benefit, although slightly affecting the ship's sailing qualities. These spritsailed, flat-sterned ships were generally called *vlieboot* or flyboat. In the 1580s Holland and Zeeland had between two and three thousand of such commercial ships, varying from 40 to 140dwt. Refitted by the rebels, they carried six to 20 guns, a crew of 40 to 140, and bulwarks covered with old nets, thick cloths or wood, to protect crew and gunners from small arms fire. They could be used anywhere, at sea, in shallow coastal waters, and up river. Not surprisingly, these vessels formed the lion's share of the rebel fleet: around 75 per cent at the time of the Spanish Armada. These relatively small, nimble ships allowed the rebels to mob larger enemy vessels, but they had the disadvantage of being quite a bit lower. The ships of the 1570 fleet were therefore equipped with tall firing platforms on bow and stern, shielded like the bulwarks.

Rowing barges were a common sight, especially in the south of Holland. These small ships with a mast and oars were used by the rebels from the

YACHT & SPRITSAIL

The designation *jacht* or yacht was given to any small flat-sterned ship that could sail well (*jacht* means hunt). Most fleets had a few as messengers and scouts, often sailing hundreds of miles ahead or between fleets. In terms of size they overlap with large longboats at one end and pinnaces or frigates at the other. They often give the impression of a scaled-down version of a large warship. Around 1600, the famous *Duyfken* (Little Dove) for example made several return journeys to the East Indies, participated in the battle of Bantam (1601) and was the first European vessel to discover Australia in 1606, yet was only around 40 to 50dwt and perhaps 45 to 65ft (15 to 20m) long. But ships of 100dwt might also be called 'yacht'. During the seventeenth century they designated relatively shallow-drafted ships with a transom, oars and often leeboards, to make them suitable for any kind of water. The yacht depicted is from the mid-seventeenth century. Notice the closed ports for the oars and the rather broad leeboards.

Small spritsails were used throughout the war, on rivers and coastal waters. During the civil war period these formed the vast majority of the rebel's fleet. Widely available and quick to militarize, they were the mainstay of the 'brown-water navy'; all that was needed was the addition of a few guns and bullet-proof shielding. As the war progressed, every admiralty maintained a fleet of such ships, usually 20dwt, with four swivel guns and a crew of ten. Most waterside cities would have had several, kept armed and ready.
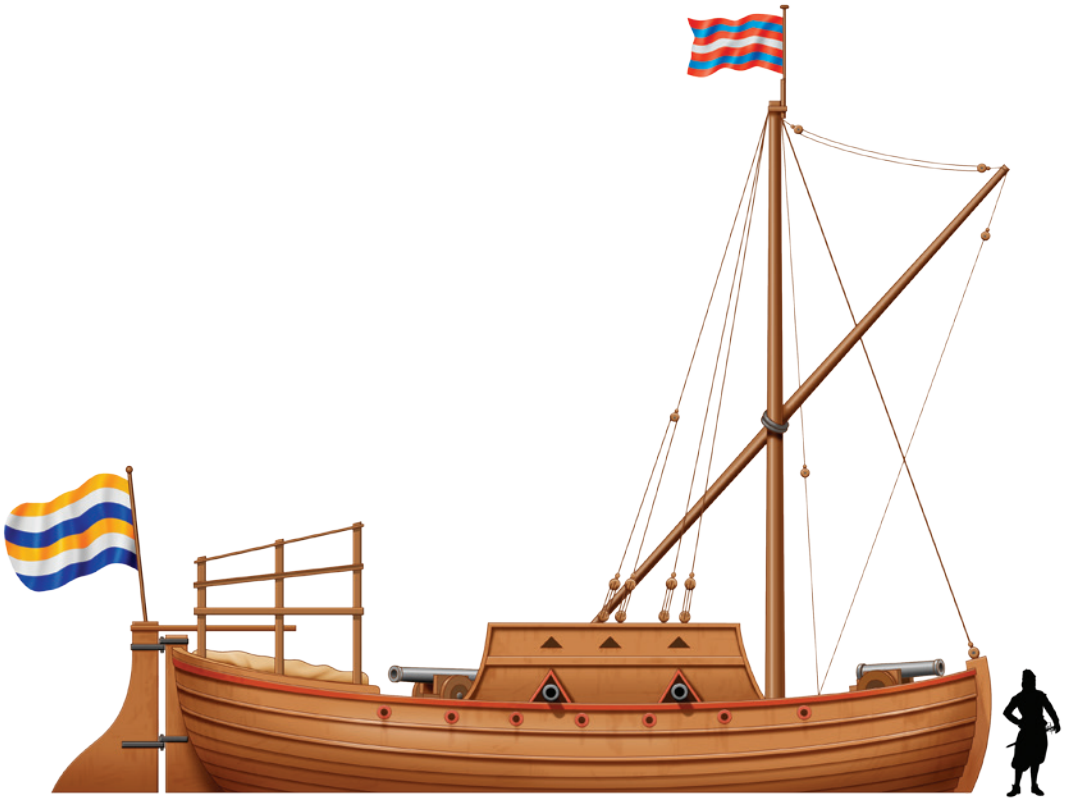
During the fight between the two flagships at the battle of Bergen op Zoom, rebel shipmate Jasper Leynsen managed to climb the mast of the Spanish ship and take down this flag. Almost 50 years later Zeeland still paid his mother an allowance for his heroics. It's the oldest surviving flag (fragment) of the 80 Years' War. (RM)

start in order to better navigate the shallow water and retain mobility when there was no wind. They were armed, and provided with shielding on the bow and along the sides to protect crew and gunners. Some larger ones were purpose-built as 'war galleys', like the two built in Enkhuizen in the summer of 1572, with 94 and 112 crew respectively, each with several guns. They helped force loyalist ships from Amsterdam back into the port so it could be blockaded. The next year they were heavily involved around Haarlem during that siege. To relieve besieged Leiden in 1574, a fleet of 70–80 small galleys was created, each with a draft of just 1.5–2ft (40–60cm) so they could navigate the inundated land. Shielded at the bow, they had an extra seven or eight calivermen and four or five small iron guns per vessel. The siege of Zierikzee in 1576 also attracted a lot of rowing barges and small galleys. The Zeeland Admiral went to Rotterdam with 800 men to fetch and crew the fleet that had been built there. Each of those galleys was propelled by ten to 18 oars and had two bronze guns in the bow and six iron swivel guns along its sides. One of the engagements there illustrates just how shallow the water could be; fleeing crew members of overpowered galleys simply jumped overboard to wade to safety.

Aboard

Most sailors in the rebel fleet were merchant sailors, volunteering or hired for temporary operations. The one big exception occurred during the siege of Haarlem in 1573, when the rebels created a fleet to control the Haarlem Lake and supply the city. In great haste that fleet had to be expanded and it was decided to crew these with farmhands and other landlubbers, perhaps because a lot of the supply vessels were the punts they used in their daily life. But unlike their fishermen allies just a few miles north, they had no experience with naval battles and suffered dearly for it.

The crew were armed with swords, daggers, spears, axes, caltrops, firearms etc. for the inevitable boarding actions. Most ships carried ordinary infantry for that express purpose, and especially on spritsailed vessels they would greatly outnumber the sailors. Some men might wear a cuirass or helmet for personal protection, certainly the officers. Such infantry units also contained a handful of sword-and-buckler men, as was common on land, usually young noblemen. The fighting was done in confined spaces. To help drive the enemy out, an assortment of chemical weaponry was used: incendiaries, smoke, tear gas, and poison gas were all available, usually in the form of pots, made from ingredients that were very difficult to extinguish. One passive defence on bigger ships against boarders – though not their pots – was the protection net, hung across the beams on which the ship's boats were normally stored. This greatly hindered boarders, but allowed defenders to engage from underneath. During the last decades of the century, these developed into wooden gratings, and eventually into proper decks.

Ordnance

Before any boarding, the guns would speak. In the chaotic early years, most vessels were on the small side with six to ten guns. These early naval guns were borrowed from surrounding cities. After their defeat at the Diemerdike

in 1573, for example, the city of Hoorn had to rebuild its fleet and arsenal quickly to replace its losses. A new foundry was set up in the local Catholic church and everyone in the city donated to the cause, from chandeliers to church bells, so enough new guns could be made. Even the streets chipped in: the city's cobblestones were used as ballast in the new vessels. Bronze guns were preferred, because cast iron guns were more brittle and thus had to be made much heavier. But bronze was around five times as expensive. Effective range at sea was no more than 100–200ft (30–60m) and the majority of guns were too light to seriously damage proper warships. The number of heavy anti-ship guns slowly increased though, while the amount of lighter anti-rigging and anti-personnel guns aboard declined.

Light guns, often breechloaders, were usually mounted on swivels. For heavier pieces two-wheeled carriages like the ones on land were used, especially aboard shallow-draft vessels (they were usually land guns, ready to be offloaded, e.g. to reinforce dikes), or four-wheeled truck carriages, a recent development. Using four small wheels really was the best solution for shipboard use: many small wooden wheels on thick wooden axles rolling on wooden decks increased friction, thus decreasing the gun's recoil. Usually the front wheels were bigger to carry more weight and to compensate for the deck not being level (most had a 3–5 degree camber). Some small and medium-sized guns on upper decks used three-wheeled carriages, so they could be quickly turned, to repel boarders for example. Carriages were unpainted.

In Action

Prior to battle the blood flag was hoisted, a huge red flag flying from the stern telling the world that violence was about to happen. To avoid more confusion in an already chaotic battle, ships were often paired beforehand for mutual support. Likewise such pairs would be assigned one specific opponent, ganging up whenever possible. Honour demanded that flagships engaged each other. Boarding was the preferred method to force a decision, thus tall vessels had a distinct advantage. Once aboard, another battle started which could last for hours or even days. Using axes and incendiaries it must have been akin to trench and tunnel warfare. If unlucky, the boarded vessel was left to cope on its own. The boarders could then remove their wounded

B

Reconstruction of Willem Barentsz' yacht, based on *Het Schip Willem Barents* by Ab Hoving and Cor Emke. In 1597 Barentsz led the third expedition to find a north-east passage to China, which ended on Nova Zembla, where he died. Most of the men survived the harsh winter, however, and managed to return. Many of the objects they left behind have been found over the years. Barentsz' ship was a typical yacht of around 1600. It has the general layout of a warship of that time: three masts, square rigged with a lateen sail on the mizzenmast. This 60dwt version had a length of 68ft (21m) and a beam of 22ft (7m). It had an uninterrupted gun deck with space for 14 or more 3-pdr guns and some lighter swivel guns, but it's doubtful that many were carried for this expedition, especially with its crew of only 17 men. The ship had an early form of doubling, when just two layers of wood were used, sometimes with sheets of lead between them. The yacht's control too was typical of bigger ships of the time. A vertical whipstaff moved the horizontal tiller, which was fixed to the rudder. The helmsman could just look over the ship's quarterdeck from the companion (the small structure covering him). The whipstaff could only be turned 40 to 50 degrees to either side, resulting in a 5 to 10 degree turn of the rudder. Thus in order to tack, the sails had to be used.

Supplies were strictly rationed during long trips. Aboard the Nassau Fleet in 1623, for example, each mess of seven men would receive 4lb (2kg) of butter and 7lb (3½kg) of cheese per week. Every Sunday and Thursday each mess would get 7lb (3½kg) of meat. On Tuesdays each mess received 5¼lb (2½kg) of bacon. For the remaining days there was 1¾lb (almost 1kg) of stockfish. A few weeks into the trip, personal rations would be handed out. On this fleet that was 4lb (2kg) of bread each week and 24lb (12kg) of cheese for the whole trip. Of course regular landings secured fresh water, fruit and meat. For large fleets this could take days and often a crescent-shaped earthwork was thrown up on the beach, with a few guns in it. If possible this was done as trade. If an unpopulated but promising area was found along a regular route, a station was founded. This is how Cape Town started, when Dutch farmers were brought there to ensure a steady flow of food for VOC fleets.

KEY

1. Mizzenmast & Top
2. Mizzen Sail (a lateen)
3. Main Mast
4. Flag of Amsterdam (the ship's home port)
5. Topsail & Yard
6. Mast Cap (around 1570 Krijn Wouters from Enkhuizen invented the mast cap that could be unfastened, to lower the topmast)
7. Top
8. Main Yard (until the seventeenth century, sails were raised and lowered by raising and lowering the yards)
9. Main Sail
10. Shrouds (together with individual ropes – or stays – called standing rigging, to support the masts)
11. Tackles (assemblages of blocks)
12. Lines (ropes) & Blocks (together called running rigging, to control sails and yards)
13. Foremast (with same elements as main mast)
14. Bowsprit
15. Spritsail
16. Head (or Beak)
17. Hawsehole (opening for cables)
18. Anchor
19. Closed Gun Port
20. Forecastle
21. Capstan (always made from the best wood)
22. Upper Deck
23. Lower Deck
24. Main Hold (ballast and cargo)
25. Cargo Hatches
26. Scupper (opening to drain water)
27. Open Gun Port with gun
28. Doubling
29. Rudder
30. Tiller
31. Whipstaff
32. Companion
33. Quarter Deck
34. Transom
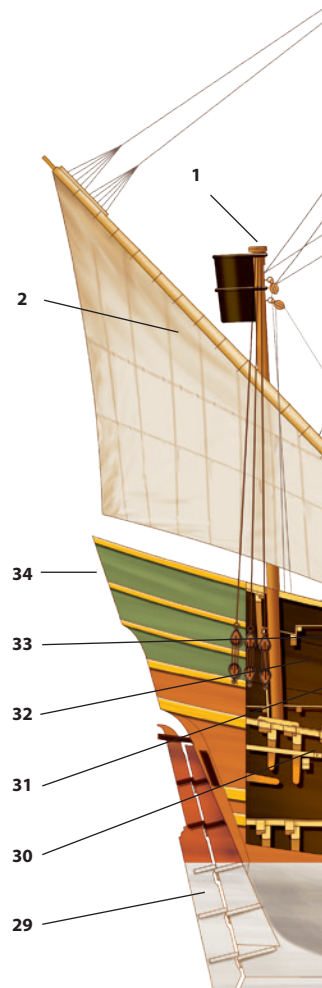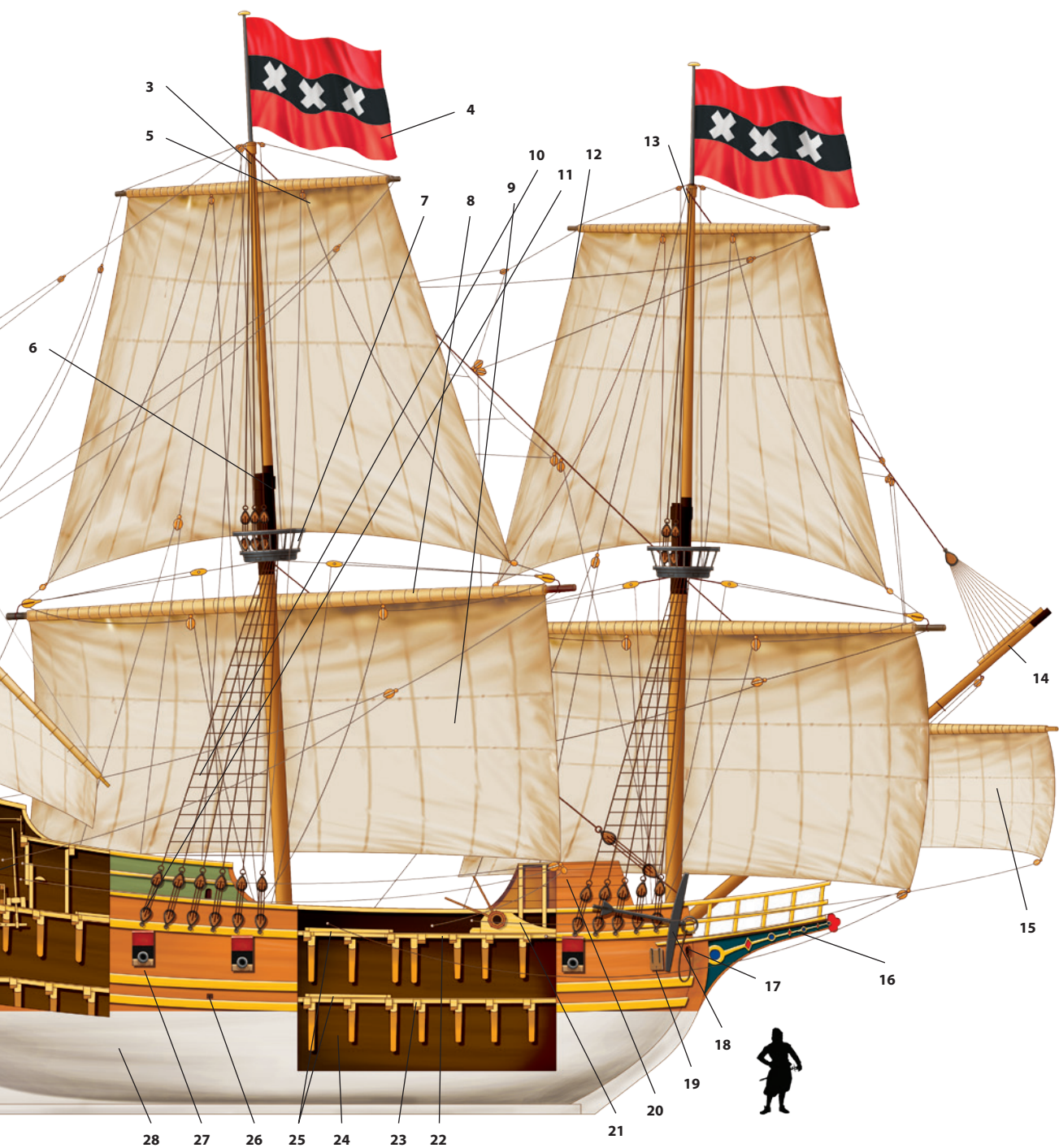
The (often decorated) blood flag was raised when the enemy had to be engaged. Most other general signals weren't meant for combat, but to ask for assistance, keep contact, give the order to sail, anchor, or assemble on the admiral's ship. Signals were made with flags, guns, lamps (at night) and even sails (before the 1630s), e.g. the admiral's flagship would light two lamps at night and no one was allowed to pass it; or if urgent assistance was needed, a flag was stuck out of a gun port; and when all the officers had to come to the flagship, a gun was fired and a white flag raised. (Vroom, 1614, SM)

and bring fresh reserves to wear the defenders out (Zuiderzee, 1573). Desperate measures were sometimes taken to avoid surrender to boarders. At Bergen op Zoom (1574) the rebels set their flagship alight when it seemed lost, and in 1572, after he got stuck on a sandbank in his fight with four enemy vessels, Veere's Admiral Sebastian de Lange blew up himself and his ship (Sloe, 1572). Already at the start of the century, gun-only battles were envisaged, and sometimes commanders did try to overpower or sink enemy ships with guns only (Zuiderzee, 1573). The broadsides weren't damaging enough yet though, except in stopping boarders at point-blank range, for which a defensive line of battle was used (Bergen op Zoom, 1574). At the strategic level, the civil war period was about control of home ports and waters. By taking Den Briel (between the sea and Rotterdam), Enkhuizen (between the sea and Amsterdam) and Vlissingen (between the sea and Antwerp), the rebels gained full control of Dutch trade routes and the wealth that came along with it. On land, the Spanish army tried something similar, but failed because of rebel inundations and naval supremacy. There were several joint operations with England until the death of Queen Elizabeth I (e.g. Spanish Armada, 1588; La Coruna, 1589; Cadiz, 1596; Azores, 1597; Sluis, 1599; Portuguese Coast, 1602 and 1603) and with France (e.g. La Rochelle, 1570; Calais, 1594; Dunkirk, 1595).

WAR FOR INDEPENDENCE, 1588–1620

During this period, Maurice of Nassau reformed the army and revolutionized land warfare (see MAA510 and 513, *Dutch Armies of the 80 Years' War 1568–1648*, volumes 1 and 2). His reforms were based on science, research and experiments; for example, he developed lightweight ordnance. Another influential person for the navy was Pieter Janz Liorne, designer of a new breed of ships. This period saw an active and offensive navy, sailing beyond its own waters to seek out and engage the enemy far away. The Spanish trade embargo put 30,000 Dutch sailors out of a job and dried up Dutch trade in spices that Spain had monopolized. Dutch merchants then decided to go to Asia themselves. This was met by a very heavy-handed response. Government and merchants then decided to pool their resources; in 1602 a single entity was created for the Asia trade, the *Verenigde Oostindische Compagnie*, or VOC (United East India Company). It soon became apparent that factories – trading posts – were insufficient. The VOC rapidly militarized and for the first 20 years or so focused on establishing a permanent power base, called Batavia (Jakarta, Indonesia), with a single leader (the governor general), and creating its own monopolies. For this, the VOC required its own navy. It built and owned ships and appointed its own admirals, yet, even so, there was a close co-operation between the republican navy and the VOC, and flag officers might be employed first by one, then by the other.

The 32-gun, 460 dwt *Mauritius* arriving back in Amsterdam in 1599, after its 15 months' journey to the East Indies, its second. Typical of such ships, it has more guns than a big merchant but less than a true warship. Notice the heavy red cloth covers on bulwarks and tops: during battle these hid the men and caught musket balls. (Vroom, 1599, RM)

Organization

After the appointment in 1588 of Maurice, Count of Nassau, as admiral-general, the addition of more boards, and another failed attempt to centralize these, the final structure which would last until the end of the Dutch Republic was established in 1597: five admiralties, in Middelburg (aka Zeeland), Rotterdam (aka the *Maas* or Meuse), Amsterdam, West Friesland (aka Northern Quarter, with Hoorn and Enkhuizen taking quarterly turns), and Friesland (also for Groningen, first in Dokkum, then in Harlingen). Each admiralty worked semi-independently, with the central government and the admiral-general deciding on the policy for the war at sea. The admiralties had to execute three main tasks. Firstly, as before, they were responsible for the maritime licences and taxes. Secondly, they held the judicial power over prizes and privateering. And thirdly, they had to execute the national Order

Typical Dutch captain, first quarter of the seventeenth century. (Willaerts, *circa* 1620, RM)
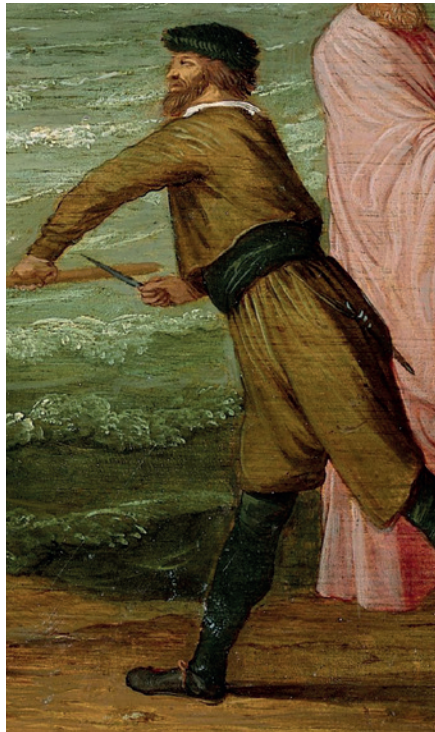
for the Security of the Sea, which first appeared in 1589: eliminate enemy fleets; protect their own and attack enemy shipping; support army operations; build, fit and maintain warships and recruit crews. The government decided where to go to with what, while the admiralties managed the necessary fleets. All of this should have been paid from the duties, fees and prizes they collected, which never sufficed. To cut costs, wages were paid late and big warships sold off whenever there was a lull in operations, often without the government being able to intervene.

Below the admiral-general were the two lieutenant-admirals, from Holland and Zeeland. Next came the vice-admirals, one each from Zeeland, Rotterdam, Amsterdam and West Friesland. These were all permanent ranks; all other ranks were hired on a temporary basis. The third flag officer rank, from 1603, was the rear admiral or *schout bij nacht*, appointed per campaign (sometimes an admiral too was appointed for a single mission). Next came the rank of commander, not a flag officer, but the captain of the biggest ship in the biggest squadron of the blockade fleet. At sea, the commanding admiral would call a war council for every major decision. This included changing the government's very detailed orders, which often became irrelevant during a long-distance operation. Any change was meticulously noted and explained for the unavoidable inquest upon return. The commanding admiral would also issue specific orders and a

C

HOLLANDSE TUIN

The *Hollandse Tuin* (Dutch Garden) was built in 1598 as part of the navy's sudden drive to have big ships. This one was 1,000dwt with 40 to 50 guns, including *Megaera* and *Tisiphone*, two 10,000lb (5,000kg) 18-pounders on loan from the city of Leiden. A new feature was the gallery. At first these had hoops for a cover, like here, but on later ships fixed enclosures would be used. In 1599 it was Pieter van der Does' flagship, leading the 73-ship, 7,600-man fleet to A Coruña, the Canary Islands and São Tomé, where tropical diseases killed 1,800 men, including Van der Does. Then from 1603 to 1605 it was Paulus van Caerden's flagship for the 5-ship expedition to the All Saints' Bay in Brazil and the West Indies. That fleet included the *Bul* and *Consent* (Amsterdam).

The *Hollandse Tuin* was one of only three purpose-built four-masted warships of the Dutch 80 Years' War's navy. The others were the similar *Leeuw* (Lion, Rotterdam) and smaller *Neptunus* (Amsterdam), all from the 1590s. The admiralties decided (too) quickly that these ships were too big to be practical. This one was sold in 1606 to the Duke of Florence, who had it refitted as a bulk carrier for grain. Hoping to use it for the 1607 expedition to Spain, the government tried in vain to prevent the sale, causing a diplomatic incident with France: the king's wife was from Florence. Ironically, Lieutenant-Admiral Jacob van Heemskerck was killed during that campaign at the battle of Gibraltar: he lacked a properly big flagship, like this one. History mentions the ex-warship again in 1608, sailing into Portsmouth after a mutiny.

The 120-man, 500dwt Amsterdam Admiralty warship *Neptunus* at the battle of Cadiz in 1596. This Dutch-English expedition was the first time the new Dutch state flag was used: the red lion on a yellow field. Because it looked so much like the flag of Holland, the colours were reversed in 1617. When sailing in squadrons, the first squadron usually carried orange flags, the second white and the third blue. The flag officers also flew their own banner – often with a long pennon in their squadron colour, the admiral from the mainmast, the vice-admiral from the foremast and the rear-admiral from the mizzenmast. A ship would also fly several Prince's Flags and usually the flag of its admiralty, city or captain (usually mizzenmast), and owner (foremast). (Anthonissen, 1608, RM)

set of signals for every operation. From 1621 convoys were required to use 'the general signals already known'. Aboard each ship served a captain, a lieutenant, a master, and below them the many other ranks. Captains were paid for and responsible for victuals. Crew members were volunteers, despite the low navy wages; the prospect of prize money made up for it. In 1614 the average captain's share of a prize was equal to four years' wage. When the Twelve Years' Truce made many captains unemployed, a number of them continued their craft as pirates in North Africa.

Most of the navy's vessels were involved in escorting convoys, blockading the Spanish ports in Flanders, and cruising the seas from North Africa to Norway. Not all enemy ships were treated as such: Flemish fishermen could buy licences to be left alone, primarily provided to stop them from turning into privateers (this was done on both sides, the loyalists even had a treaty with the island of Ameland). From 1589 the admiralties would meet every semester to draw up new plans. Often experts and third parties were invited to join, like VOC boards or city representatives. Information and ideas from all levels of society were thus absorbed. In 1615, for example, it was decided to equip two warships and send them to the Mediterranean, based solely on the advice of a merchant master who had managed to escape his enslavement there.

Ships

The first Order for the Security of the Sea in 1589 called for 60 to 140dwt flyboats to equip the blockade fleet. Copying the Flemish navy, they had to be indistinguishable from normal merchants, i.e. no castles, tops, topgallants or flags, and with protection nets (i.e. not gratings). These ships proved to be too small to be proper warships though. For the joint expedition with the English to Cadiz in 1596, the Dutch were to provide eight ships of at least 400dwt, eight of 300dwt and eight of 200dwt. But to do so, 18 merchants had to be hired. The largest ship Holland had was the 500dwt flagship *Neptunes*. Zeeland supplied two very large flyboats of 400dwt (*Aeolus* and *Neptunus*). It was realized that an effective offensive navy required large purpose-built warships, thus it was decided to buy several English ships (like the 300dwt *Consent*) and to build four 'ships of violence' of 800 to 1,000dwt, square-rigged four-masters (the only ones built). Two of these were ready in time for the 1599 expedition to the Canary Islands, the 1,000dwt *Hollandse Tuin* (Dutch Garden, Amsterdam) and the slightly smaller *Leeuw* (Lion, Rotterdam). Both had great difficulty in their home ports, they were too deep and too long. Zeeland's large flyboats were unsatisfactory as well. Simply scaling up the flyboat design didn't work; they were too deep and wide to sail well, yet too small to carry sufficient provisions. The necessary extra supply ships added more cost. For all these reasons, these large ships were sold

within a few years. In 1600, Maurice of Nassau set in motion an attempt to standardize. In the previous decade he had done so with the army, changing it into a war-winning machine. The new vessels had to have a shallow draft, big cargo capacity, more guns, and good sail and sea characteristics. The admiralties asked Pieter Janz Liorne to advise. He was the inventor of the spacious merchant design called *fluit* (flute): narrow, bulbous and long, it revolutionized the bulk trade. In December of 1600, all the navy's shipbuilders assembled in Hoorn for his explanation. Within a few years a new fleet of 80 large warships of similar design had been built, between 200dwt (e.g. *Meermin* or Mermaid, Amsterdam) and 400dwt (e.g. *Leeuw* or Lion, Rotterdam). With crews of 100 to 140 and the required victuals for six months, they outclassed the earlier ships that were twice their size, yet with the same crew complement and space only for the then required two months of victuals (lowered to six weeks in 1593, because of larger crews). No mandatory specifications or drawings were used for the new standards, so every shipyard built according to its own interpretation. Amsterdam, however, started to build ships in matching pairs, like the *Meerman* and *Meermin* (Merman and Mermaid, 1604).

At the start of the long truce, many ships were sold, to the VOC (the four largest in 1611) and to navies abroad, like the French. Downsizing had been thorough; at the end of the truce, in 1621, the navy had 46 large ships, but only nine bigger than 500dwt, with seven of those built after 1618. The shortfall from the budget cuts was resolved quickly again, if only because hiring the many refitted merchants needed (51 just for Holland) was even more expensive. With around 850dwt the biggest new warship was the *Wapen van Delft* (Arms of Delft, Amsterdam), finished in 1622. During the truce another kind of big ship had appeared, the East Indiaman: big, armed cargo ships that sailed to Asia in eight to nine months. They had an extra deck just 3ft (1m) high for the crew and their belongings which increased both weight and structural strength. They were made from high-quality German oak and were doubled below the waterline to protect against shipworm (*Teredo Navalis*), common in warmer seas (ex-navy ships were

Major task of the navy: the blockade of Dunkirk, with always one squadron in place, here in 1605. When the Spanish Armada was approaching in 1588, the transport fleet it was supposed to escort to England was unable to leave its ports in the Spanish Netherlands: Dunkirk was blockaded with 24 ships, Antwerp with 135, Sluis with 30, the rest of Flanders with 116 and Delfzijl (still Spanish) with 100. (Anonymous, 1612, RM)
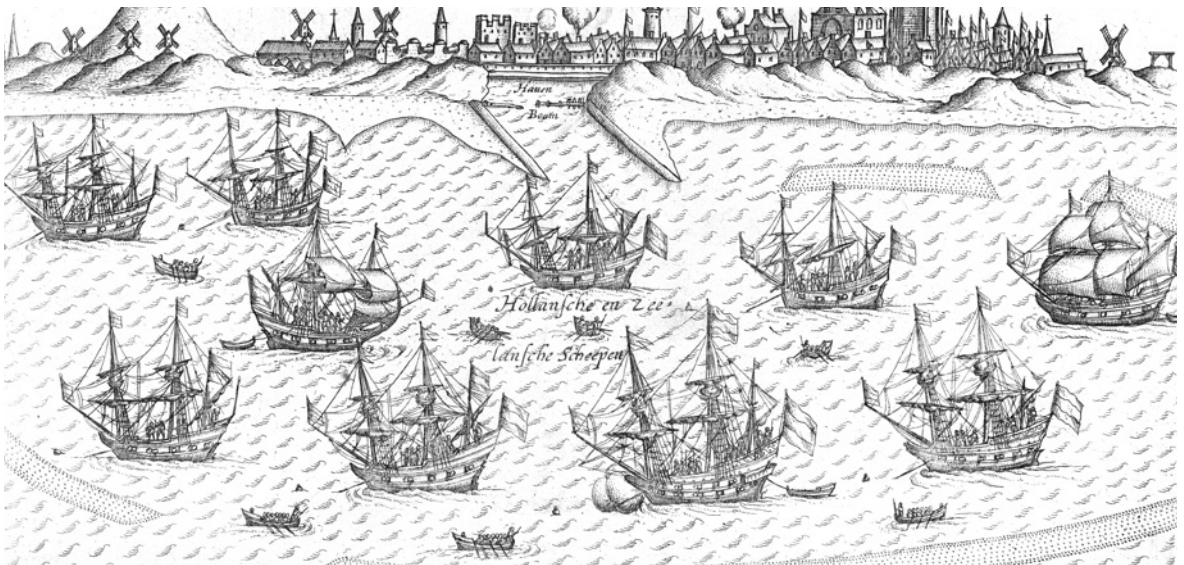
VOC return fleet anchored off St. Helens, to resupply. Interestingly it seems both the old and the new States' Flags are flown. This would date the scene to 1618. (Verbeeck, *circa* 1620, SM)

doubled too when going there). In Asia and the Americas the VOC was the Dutch navy and these East Indiamen the warships. Because of their size and strength, they were the preferred choice at home if the navy needed extra ships, but then their gun ports needed to be enlarged, they lacked heavy-calibre guns and they usually had sand ballast instead of the navy's iron, increasing the risk of sinking if springing a leak. Worst of all, they were slow, holding back the entire fleet. But even without all the adjustments, VOC ships were warships to be reckoned with.

Warships carried two smaller, oared vessels aboard, a boat and a longboat (sometimes called a 'rowing yacht', a term very loosely used). The blockade fleet usually formed these into small squadrons. Those were specially designed, with 16 oars that were extra long, planks to stand on to row, and a musketeer at every oar, who doubled as an extra rower. They were vital for intercepting blockade breakers. Rowing barges received the same design makeover as the large ships and started to be called yachts. They looked like scaled-down warships with optional oars. Yachts were used as messengers, scouts, and in shallow water as warships. East Indiamen carried yachts cut into segments to the east, where they were reassembled to form the local VOC warfleet. Yachts were manoeuvrable and mobile. Their crews were specially selected and received extra pay. The smaller ones of 20 to 40dwt were sometimes called rowing yachts and often carried aboard warships. The

D **GALLEYS**

Six Rhine barges were recycled to build the *Zwarte Galei* (Black Galley) aka Galley of Dordrecht, in 1600. Captain Jacob Michielsz Wip organized 100 volunteers to man the 38 oars of 22ft (7m). It was armed with a metal spike-ram, 15 bronze and many swivel guns, and carried 80 musketeers. At the end of 1601 both the Republic and Spain had a galley fleet in Zeeland's waters. Yet the two met only once, on 25 May 1603, close to Sluis, Spain's local galley port. According to witnesses, the Dutch galleys were larger and better equipped than the Spanish, which also seemed to have lacked the extra tall, bulletproof bulwarks to protect the oarsmen. After a bloody two-hour battle, the Spanish galleys retreated to their port, their commander killed. However, Captain Wip had died as well.

The small galley was part of the purpose-built, very shallow-draft relief fleet that rowed across inundated fields to rescue starving Leiden on 3 October 1574. 'Galleys' like this were a common occurrence on Dutch inland waters that decade. They carried a few men, a small field gun, a ram, a hut, and heightened bulwarks acting as shields. The big fleet of tiny war boats (around 3,000 oarsmen and 4,000 soldiers) fought its way through Spanish lines to ensure the large number of transports could get to Leiden to deliver herring and bread: these are still handed out every year at the traditional 3rd October celebration. This was the first Spanish siege of the war that was defeated, and probably the first ever land battle won by boats.
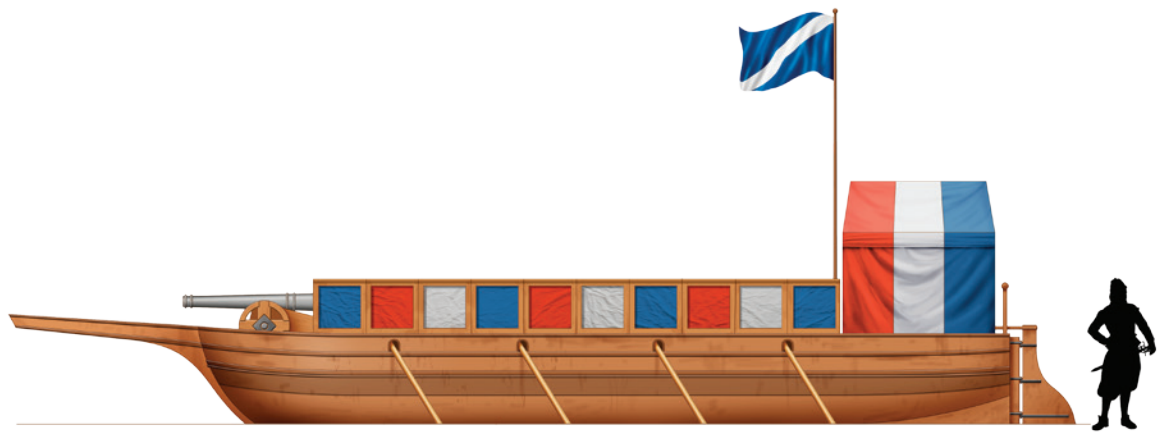
This Dutch warship shows the problem Spanish galleys faced: broadside, mass and height. Only against undefended rudders or lone ships on a windless day did they stand any chance. With sufficient wind and bad luck they might even be sailed over, as happened to two galleys hiding in the night on 4 October 1602 near Grevelingen, when Vice-Admiral Jan Adriaansz Cant and his aptly named *Maene* (Moon) caught up with them. (Bol, *circa* 1640, RM)

larger ones of 100 to 120dwt were also referred to as rowing pinnaces. An important development which greatly improved usage at sea of shallow-draft vessels like yachts was the leeboard, introduced in the late sixteenth century.

The ultimate oared ship, the purpose-built war galley, made another brief appearance: both sides used it in the Scheldt estuary from 1598 to 1603. The bailiff of Vlaardingen, Bartholomew of Bueren, proposed to build (and command) one, with criminals to man the oars, thus saving real sailors for duty at sea. This became the Red Galley, with a length of around 70ft (23m) and beam of 16ft (5m), with 24 oars, each with two rowers, all convicts. Its mission was to escort cargo ships between Holland and Zeeland. A year later the Spanish galley fleet arrived in Flanders. In reply, the government ordered a bigger galley to be built, the 15-gun, 38-oar Black Galley from Dordrecht, captained by Jacob Michielsz Wip. The new galleys were so successful that four more were ordered. These were designed by Liorne and measured 120ft (40m) by 22ft (7m), with seven guns: three in the bow, two in the stern and one on each side. The four, from Amsterdam, Hoorn, Rotterdam and Zeeland, were built in just a few months and at sea in the summer of 1601. The wooden bulwarks on all galleys were extra high to offer better protection against small arms fire. In 1602 an extra layer of wood was added to keep the rowers safe from enemy musketry. Dutch and Spanish galleys met near Sluis in 1603 where Wip and the Spanish galley commander Francis of Spinola were both killed. After this battle the Spanish galleys didn't venture out any more. When the city was taken by the Dutch army, the remaining galleys were brought north. When the truce started, these and the Dutch galleys were decommissioned, some left to rot, others picked up by the VOC and shipped to Asia, part of the small fleet of galleys along its African route and in East India; in 1622 it had nine in service.

Aboard

The navy's crews were very international, just like in the Dutch army. Perhaps half of the sailors came from abroad, most of those from the Spanish Netherlands. Even though ships and crews weren't hired full time, often the same ships with the same captains were hired again and again. Government commissioners checked these regularly; if a crew was discovered to be smaller than what the captain was paid for, he was penalized; if a ship was

discovered without a captain, no one would be paid. One captain was fired from his blockade ship for being absent with 17 of his crew. It wasn't all bad though; one sailor was allowed to return home to care for his nine kids, and a 70-year-old gunner could stay on shore with full pay as a thank you for his 35 years of loyal service. Many captains sent their sons to sea early, but the navy refused boys under ten years of age. Unlike the army, navy officers didn't need to pass any kind of examination to get the job. Only ship surgeons were checked, by a proper doctor. Once aboard they held a consultation hour twice a day, next to the mainmast. Officers could enjoy their meal at a table, everyone else was put into groups of around seven for the duration of the journey, based on occupation and rank, to share one mess during meals.

For the tasks aboard, the crew was organized into three quarters, called the quarter of the Prince, of Count Maurice, and of Count Ernst. Officers, surgeons, carpenters and those taking care of the sick were exempted. The quarters worked first in four shifts of six hours, later in six shifts of four hours. During their shift, a quarter was responsible for all tasks. At the start of each shift, the quarter's leader would organize them. Marines might also be included, though not participating in all tasks. The first dedicated unit of marines, expressly appointed to serve 'both on water and on land', was hired in 1589 and was the company of Justin of Nassau, the lieutenant-admiral of Zeeland who had participated in the Spanish Armada battles. They were equipped with snaphaunce muskets instead of the cheaper (but at sea unpractical) matchlocks their landlocked colleagues used. In 1606 the VOC made it mandatory to have 50 soldiers aboard each ship (10 on yachts).

Ordnance

The crew was organized into gun teams by the master gunner, each team manning a pair of guns on opposite sides. Guns grew larger, and so did the number of men required to operate them. The 18-pdr and 24-pdr guns needed eight or ten men to load and move – the guns recoiled around 2ft (60cm) inside. Until the truce, the ratio of large-calibre guns, i.e. 18-pdr and above, grew from practically nothing to almost 50 per cent on the big warships (the English navy by then had as much as 65 per cent). The navy continued to borrow guns from cities, despite already having established the first national gun foundry in 1589 in The Hague. The truce offered the opportunity to catch up. Maurice of Nassau developed new, much lighter and shorter guns with concave chambers (called *draak* or drake in English,

also mentioned as 'of the new kind' or 'chamber piece'), saving weight without sacrificing calibre or short-range effectiveness. Both army and navy used them and standardized on the 3-, 6-, 12-, 18-, 24-, 36- and 48-pdr of both the traditional and the drake, the former for accurate long-range fire, usually as bow and stern chasers. Gun complement regulation was limited: from 1596 herring fishermen had to equip their ships with guns, and from 1603 the government regulated armament (and crew) numbers for merchants sailing in convoys. That same year the VOC decided its large ships had to carry two, four or six bronze 24-pdr and three or four iron 9- or 12-pdr guns, and yachts four bronze or iron 9- or 10-pdr guns. The VOC bought many of its guns abroad.

In Action

Engagements started to be settled by gunfire, especially far from home. Portuguese ships in Asia had lighter and shorter-ranged guns, firing slower. At Johor (1602), a VOC squadron used it to win, at Calicut (1604) and Malacca Straits (1615) to escape. Most decisive outcomes though still relied on boarding. Again, one admiral decided to blow himself and his ship up rather than succumbing to the enemy: Vice-Admiral Reinier Claesz, at Cape St. Vincent in 1606. When big war galleys met big warships, special tactics were used. Galleys would attack a ship's stern to disable its rudder, against which stern guns were indispensable. Ships would attempt to run over the galley (Grevelingen, 1602), or give it a broadside if that failed. When there was no wind, a ship's longboat might be used to tow it. At home a tight blockade of the Flemish ports was maintained with over 40 ships, while other squadrons aggressively cruised the seas, even – with permission – into English waters, and as far as the Mediterranean. They were looking for enemy and pirate ships, and for slaver squadrons that scoured the European coast to carry off whole villages to the Ottoman slave markets in North Africa. After helping defeat a Spanish attack (the Armada, 1588), the roles were reversed: Spain and Portugal were attacked several times, forcing the enemy navy to stay closer to home. The biggest attack was in 1599, with over 73 ships in three squadrons, carrying 6,000 crew and 1,600 soldiers. More convoys were escorted, including herring fleets and VOC fleets to and from beyond Gibraltar. In Asia the VOC organized its own escort squadrons in the Sunda Strait. The VOC also went on the offensive, its first own fleet (1603) carrying 350 guns, had the express mission to 'treat them like they do us' and 'destroy, sink and burn' as many Spanish/Portuguese ships as possible. Yachts were the eyes and
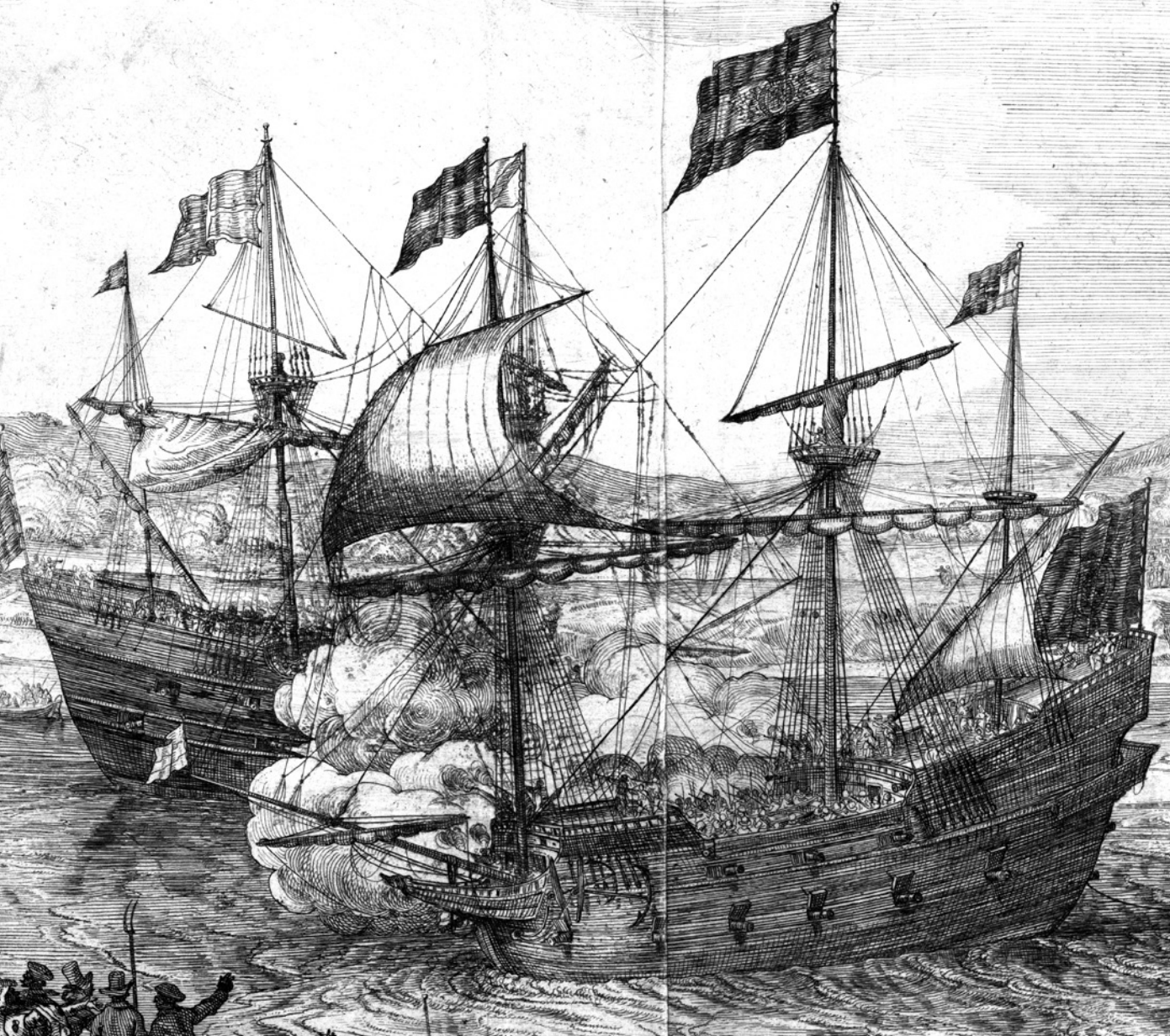
messengers of the fleet, sent individually on spy and intelligence missions, or acting as sentries, then sending out their longboats as outpost. When operating big formations, the fleets would be divided into squadrons, each with its own commander and flag colour. Strategically, fleets were used to destroy Spain's income and power far away, and establish the Republic's.

COALITION WAR, 1621–48

The navy continued to grow during Frederick Henry's reign, from 125 ships in 1628 to 143 in 1642. The size of the ships also increased; total tonnage for the 1642 fleet was up 40 per cent to 45,000dwt compared to 1628. Only the English and Spanish navies could compete with that. Weight, however, was becoming secondary; by the end of the war, the size of a warship wasn't mentioned in weight any more, but in guns. The Thirty Years' War raging in

Major task of the navy: cruise the seas to hunt pirates and enemies. Here Captain Cornelius Danielsz, aka Brackman, defeats the French pirate Chenai, in Brittany in 1619, rescuing several merchant ships and relieving the French Huguenot port of La Rochelle of its scourge. The war saw countless such engagements, none of which is mentioned in this book's Chronology. (Venne, 1619, RM)

Germany meant that Spain shifted its focus from the land route to the sea route from Spain to the Netherlands. Between 1626 and 1639, Spain sent strong fleets every year, with money and reinforcements. The Spanish navy in Flanders also expanded. Before the truce, the Dutch navy could always outnumber it, and with larger ships. After the truce, that changed, with Flemish ships of more uniform design, often larger with more guns. In the last decade it had more than 50 warships with 20 to 44 guns. On top of all this, relations with England rapidly deteriorated: in 1627 the majority of the cruiser fleet's attention wasn't against Flemish ships, but against English blockade runners, and in 1628 and 1637 war almost erupted. The Dutch fleet slowly reorganized into a professional military fleet and on 11 March 1632, the government decided that new warships had to be made according to three basic designs called charters. Unlike 1600, these were penned down as new regulations. But with the end of the war in sight and Dunkirk finally taken in 1646 (by allied France), most of the fleet was laid up or sold, even the biggest flagships, despite warnings from fleet commanders that a war with England was imminent. Thus by the end of the war, Holland's lieutenant-admiral had to make do with a flagship of only 30 guns and – again – a fleet relying on merchants. This would cost the Dutch dearly in the First Anglo-Dutch War, just a few years later, as predicted. Whereas the previous period had seen an active, offensive navy leaving its own waters to engage the enemy elsewhere, during this period it mostly acted defensively, though very aggressively in its own water. The faraway offensive action had been privatized, to privateers, the VOC and the 1621-founded *West-Indische Compagnie* (West Indies Company) or WIC. Its express purpose was to damage Spain and Portugal as much as possible in western Africa and the Americas. Perhaps the best example of the privatized navy was Elias Trip. This Dutch arms dealer sold so many guns that he set up his own production in Sweden. One of his customers was the VOC, of which he himself was a director. To protect his Swedish investments, he and Sweden bought and hired a Dutch warfleet of 21 ships with 483 guns to help defeat the Danes (Fehmarn, 1644).

Not particularly martial, but worthwhile still: the 'play-yacht', for those quiet days off. Notice the leeboards. The first marina was opened in the early 1600s in Amsterdam. At special events yachts would be 'dressed up' and famous sea battles would be re-enacted. (Lons, 1629, RM)
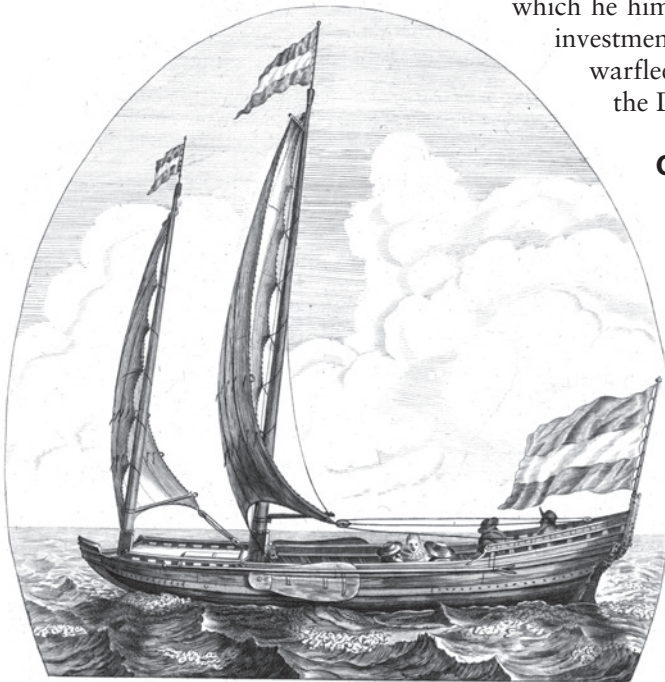
Organization

The admiralties became rife with corruption. Their board members received little pay, yet were required to spend a considerable number of hours every day on the job. The government never changed this and the positions seemed to attract corrupt characters; they even licensed the illegal export of guns and gunpowder to Spain. The many riots and failed missions didn't stop them from appointing incompetent lieutenant-admirals. Between 1630 and 1640 Frederick Henry tried to centralize the admiralties twice, hoping to turn Hellevoetsluis into the navy's home base, but both attempts failed. One positive development was that
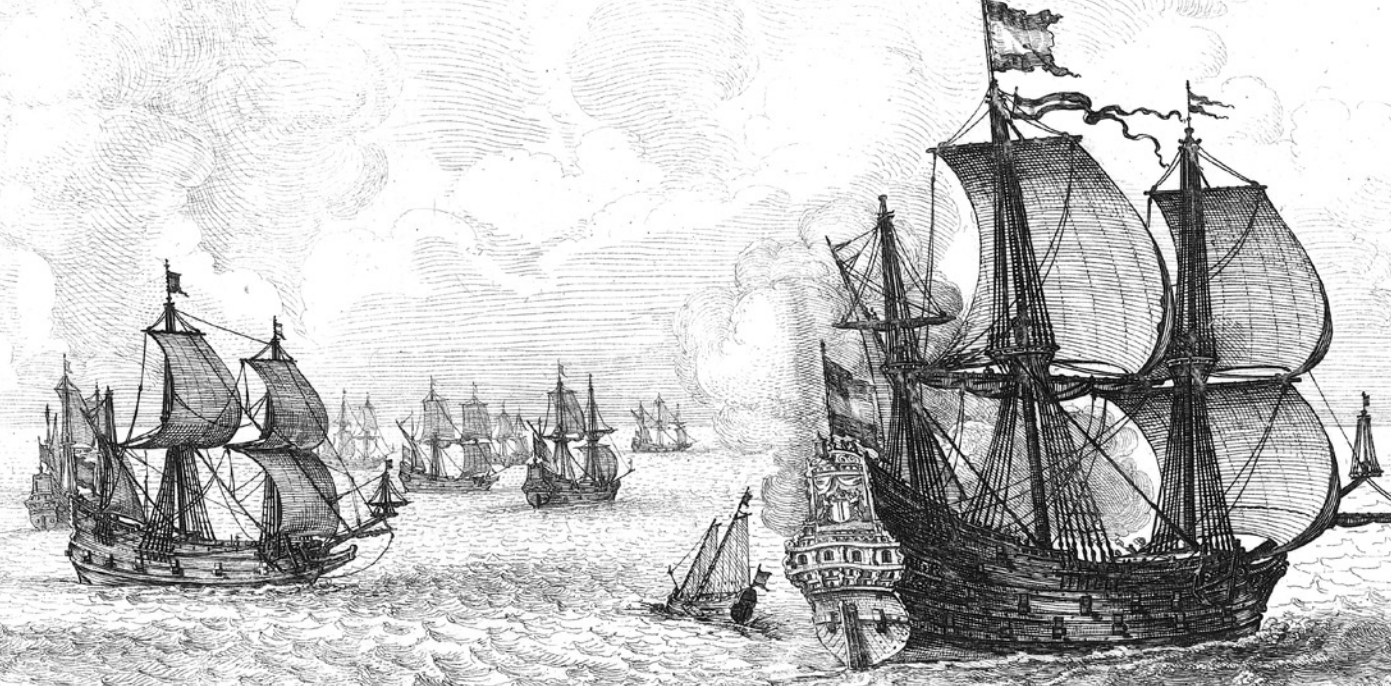
from 1648 representatives of all admiralties would meet twice a year in The Hague and this continued until the end of the Republic. Bowing to pressure, an experienced war leader was appointed lieutenant-admiral of Holland in 1629, the celebrated Piet Hein. However, he was promptly killed when he had to engage the enemy in his unsuitably small 'flagship', the 26-gun *Groene Draeck* (Green Dragon; Dunkirk, 1629). That ship was captained by Maarten Tromp, the only other war leader who had been appointed lieutenant-admiral during this period. To survive the fierce competition with the VOC, WIC and privateers for captains, in 1626 the navy finally decided to hire captains full time: 60 captains were appointed, followed in 1629 by publication of the very first 'Instructions for captains at sea'. Already by 1618 the Amsterdam Admiralty had started to test its officers (ensign, lieutenant, captain). Finally, with these three steps – which the army had already implemented before 1600 – the navy had started to professionalize. Also, in 1629, a treaty was signed with Spain to stop sending to the galleys, killing, and ransoming each other's captured sailors. And in 1634 the thorn in the side of every admiral was removed: instead of being the guest aboard his own flagship and thus being dependent on its captain for victuals (and the income attached to it), admirals now were captain of their own flagship and thus also responsible for its victuals. In 1645, at the request of Witte de Wit, the government published its first detailed fleet instructions, including signals, for his huge convoy to The Sound: 1,600 copies were printed. The first general fleet instructions came into law in 1652.

Control of the blockade fleet was shared with the government. Escorting convoys, however, was the sole territory of the admiralties. Escorts varying from one ship to a squadron could be requested, and some were obligatory, like for the VOC. Because of the huge demand for convoys, the Rotterdam Admiralty received exemption in 1638 to build for the fleet, so it could focus on vessels for escorting herring fleets. Even so, it was impossible to honour all requests, and the navy often limited itself to specific routes or industries. From 1631 this led to private, officially licensed initiatives called Directorates. These were either local city affairs (one ship each in

Amsterdam, Edam, Enkhuizen, Harlingen, Hoorn and Medemblik) or larger industry initiatives (e.g. the Great Fishery Directorate and To the East and Norway Directorate). The Dutch military fleet thus had become completely fragmented: government, five admiralties, VOC, WIC, independent industry squadrons, and individual city ships. The last founded private navy, the Brazilian Directorate, started operating in 1646 with the express aim of taking Portuguese sugar ships. In just two years it took 220 Portuguese ships, forcing the Portuguese to sail in convoy from 1649.

Ships

Shortly after the truce ended, the Dutch navy received the 850dwt *Wapen van Delft* (Arms of Delft). Just as had happened before (around 1580 and 1600), it was decided such ships were too big for home use. Most were sent on a long expedition via South America to Indonesia where all but one were taken over by the VOC. It would be another two decades before a reasonable number of large warships were available again; by then they weren't called 'ships of violence' any more, but 'great ships' or 'capital ships'.

The blockade fleet too was expanded, at first by hiring anything available. Larger blockade ships were square rigged, like the big warships. Meanwhile the Spanish navy in Flanders had been re-equipping with a new design, akin to a cross between a *fluit* and a yacht: the frigate (regularly called 'rowing yacht'). These were long, slender, without castles, and with a single uninterrupted gun deck close to the water with more headroom. They were around 500dwt and square rigged with the option to use oars. They were fast, manoeuvrable and could carry relatively heavy-calibre guns thanks to their low gun deck. The only downside was their limited range owing to their small cargo capacity: two months at most. Dutch blockade ships couldn't cope with the new enemy: they were too slow, too high, had too many decks and an all-but-useless lower gun deck. Dutch shipyards then started to build their own frigates. The best known was the 500dwt, 26-gun *Groene Draeck* (Green Dragon), which by the late 1620s consistently outsailed any other ship in either fleet. The limited range wasn't considered an issue any more:

The longboat wasn't just a ferry. It was also used to attack, assault, tow, scout, guard, escape and rescue. The armed men in this boat are marines, as evidenced by their drummer. (Vroom, 1614, SM)

in practice most ships returned to port after two months' blockade or cruise duty.

The flurry of unregulated building for the Dutch admiralties meant that in 1629 no fewer than 19 different large vessel designs were being used in the blockade fleet. This was because the only requirement for blockade ships was their weight: in 1626 this was 250–300dwt for small vessels and 500–600dwt for large. The enemy meanwhile had started to scale the design up to 900dwt. Then on 11 March 1632, the Dutch government approved three charters (standard designs) and required new warships to be built accordingly. The somewhat vague and general charters were very close in dimensions (100ft, 120ft and 128ft length, or 33m, 40m and 43m) up to 500dwt. They called for a low build without castles, an uninterrupted deck, slim hulls and light construction. The philosophy was to 'get there first' (a sound military principle), and this design resulted in the sailing qualities required for that. Unlike the standard designs in 1600, these charters were written
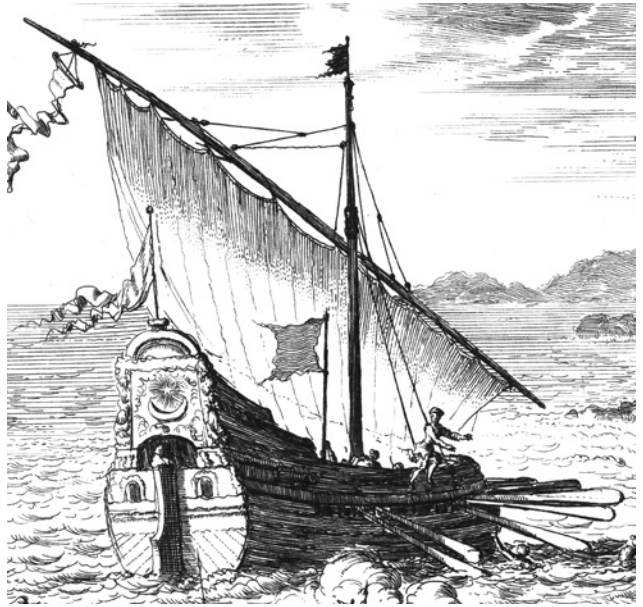
A rather unique depiction of a 1650s yacht with its oars deployed, showcasing why it was so widely used: shallow draft, nimble, good sailing qualities, wind-independent. (Luyken, 1681, RM)

A 1626 cruiser. Orange, white and blue are the heraldic colours of William the Silent, who was Prince of Orange, and Count of Nassau (the white and blue). The three were combined in many ways during the early period, on land and at sea, but the final version was the tricolour. All were called the Prince's Flag. Merchants were required to fly one from 1623. Flemish Admiral Jacob Collaert often flew one to surprise Dutch merchants. The same trick was used against him when he was caught in 1636. After 1630, red slowly started to replace orange, probably because orange was a difficult colour to keep right. From 1652 the name and the orange colour were banned for a while. From 1663 it officially became red, white and blue, and was named the State's Flag. The flags of Russia and France were inspired by it, and many more after. (Loef, *circa* 1630, RM)

The 57-gun, 600dwt flagship *Aemilia* at the battle of the Downs in 1639. It was the template for the fleet expansion programme a decade later. Here it shows one of the reasons Vice-Admiral Witte de Wit didn't like the design: it tended to heel too much, which then made the lower gun deck useless. This was later remedied. (Anthonissen, 1639, RM)

down. Navy warships built after this date all follow the gist of these charters, and all the new ships had the distinct sleek looks of the frigate. There was some opposition, because by deleting the tall bow and stern structures, the design sacrificed the defensive capabilities those gave during boarding, and this was a warship after all. But the idea that speed and agility were most important prevailed, supported by the inability of the traditional navy ships to intercept the Flemish frigates, plus perhaps their lower cost thanks to simpler hull and rigging and smaller crews. The Amsterdam Admiralty was so confident about the capabilities, that its captains would be fired if they hadn't captured or sunk an enemy vessel within four months of taking to sea. By 1638 Rotterdam alone already had 11 of these. Lacking proper big warships, Holland's lieutenant-admiral ordered an even bigger version, with two decks. It was the 600dwt 46-gun, 132ft (37m) by 32ft (9m) *Aemilia*. With a crew of 160 and 30 marines, it became the flagship of the fleet. It was the blueprint for the post-war fleet expansion programme, although by then *Aemilia* had already

E

AEMILIA

Rotterdam Admiralty's *Aemilia* was built in 1632. This 'frigate-like' ship with two uninterrupted gun decks set the tone for later Dutch warships (e.g. the 1636 *Nassau*, 1639 *Eendracht* [Unity], 1650 *Vrede* [Peace] and 1652 *Groenewolt*). It served as Lieutenant-Admiral Maarten Tromp's flagship when he defeated the Spanish fleet at the battle of the Downs in 1639. It measured 600dwt, was 132ft (37m) long, with a beam of 32ft (9m), and carried 46 guns, 160 sailors and 30 marines. It was conceived as a flagship from the start, because the fleet lacked big ships. Even though *Aemilia* was big for the Dutch navy, it was small compared to the 1,000dwt ships seen in others. Nonetheless the Rotterdam Admiralty got cold feet and wanted to cancel the programme because it thought the ship was too large to be an efficient warship for the Channel! Personal intervention of the otherwise incompetent Lieutenant-Admiral Philip van Dorp saved it (then again, it was his pet project). He and his vice-admiral, Jasper Liefhebber, completely mismanaged the blockade and cruiser fleet, resulting in defeats, losses and riots. They were finally replaced in 1637 by two experienced combat leaders, Maarten Tromp and Witte de Wit, who received the similar *Maecht van Dordrecht* (Virgin of Dordrecht). Both had served under another veteran, Lieutenant-Admiral Piet Hein, and like him Tromp had spent his teens enslaved in North Africa. Tromp increased *Aemilia*'s complement to 200 men and 57 guns: on the lower deck four 36-pdr, 11 24-pdr and nine 18-pdr guns, on the upper deck three 18-pdr and 21 12-pdr guns, and on top another nine 6-pdr guns. *Aemilia* was the first Dutch flagship that was the flag officer's own. Previously, a flag officer was the guest aboard another captain's ship, causing all kinds of problems with supply arrangements.
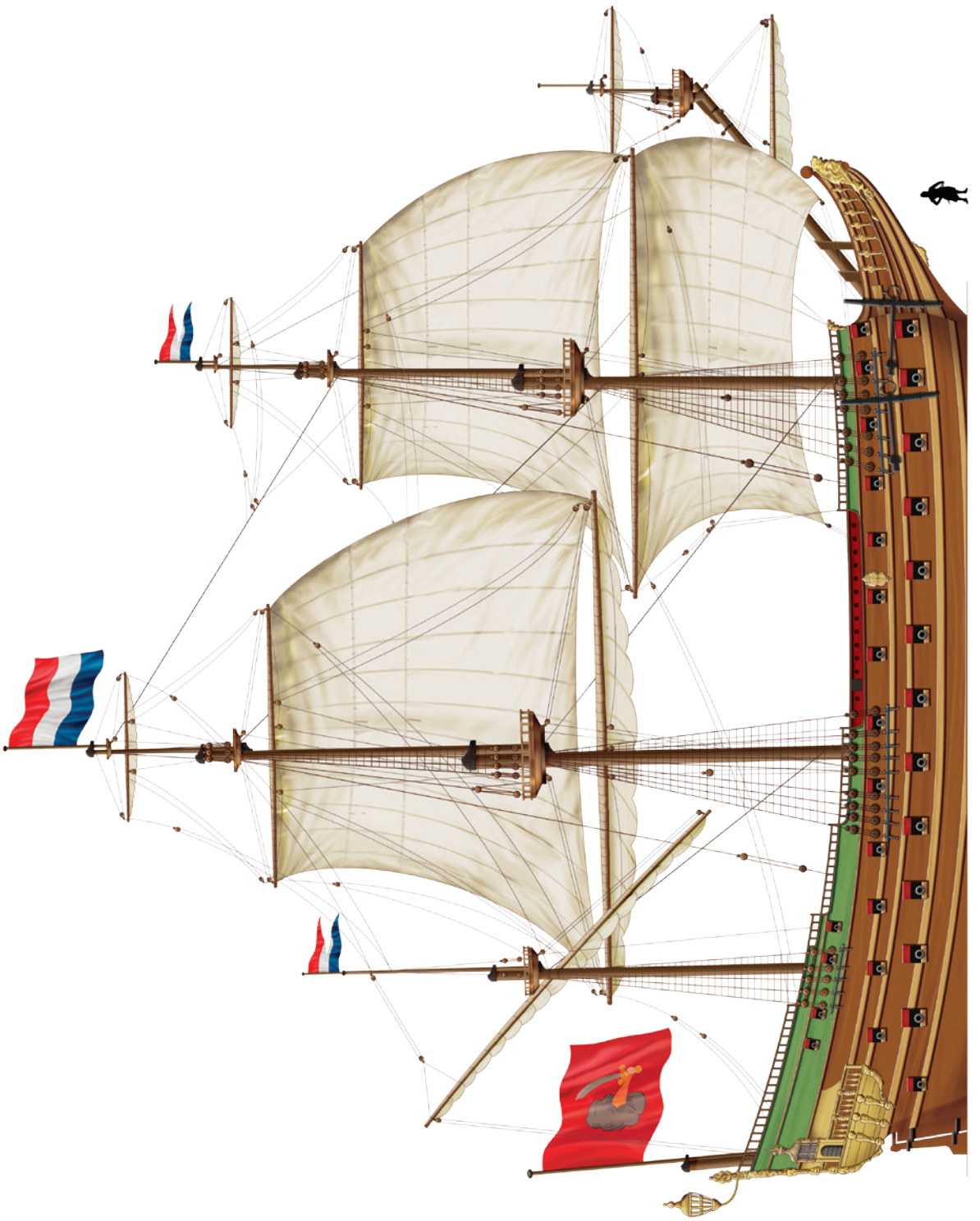
been sold. Maarten Tromp – by then lieutenant-admiral – complimented the type's excellent sailing characteristics. The only problem with the design, heeling too much in strong winds so the lower gun ports had to be closed, was rectified in the next war. That hull modification created a very stable gun platform.

This frigate-like design also became the most common ship in the WIC fleet, which remedied their lack of range by taking along cargo ships. The WIC founded its own shipyards at home. Between 1623 and 1632 these built the majority of the 216 ships it then owned. Besides these, hundreds of merchants shipped supplies and men to South America for the WIC. To make the long, dangerous trip more worthwhile, they were then allowed to do some privateering around Brazil. Unlike the navy back home, the WIC understood the need for some very large warships, if only to be able to take on enemy flagships. A WIC fleet of 1630, for example, had one 800dwt 38-gun ship and one 1,000dwt 42-gun ship. In 1646 Witte de Wit led a small fleet to Brazil using as his flagship the *Brederode*, very similar to the *Aemilia*. Like the WIC, the VOC built its own ships at home, several hundred during the war. The Amsterdam shipyard built about half of the total, at a pace of around six per year. In 1619 a repair and maintenance yard was set up in Batavia (Jakarta) where, besides normal maintenance, hulls would be doubled for the return trip. Ships that were deemed to be unfit for the journey remained in the East. The VOC built its own kind of cargo vessel, the 'return ship'; it had the lines of an ordinary warship, but with a more bulbous hull and fewer guns. The versatile yacht, with its spritsail and leeboards, became the military backbone of the VOC in the East. After the truce, one in three ships the VOC built was a yacht, by 1640 this had grown to one in two. At least from 1630 the VOC used its own charters for yachts. The small yacht was 100ft long with eight guns, the large yacht 120ft with 12 guns. In the Republic the yacht continued to be used as well.

Aboard
As the navy professionalized, so did the crew. Tromp, for example, exercised his men with daily gunnery, alarm and fire drills. This further widened the gap between navy ships and the hired and refitted merchants. After the truce, the navy received regiment-sized detachments of musketeers from the army, to act as marines (but always called 'soldiers'), armed first with snaphaunces and, from the mid-1630s, with flintlocks (an official marine corps was established in the 1660s). Unlike the army, the VOC recruited men individually. These were trained and drilled aboard ships. From around 1630 the hammock was introduced for the men; before this, they had had to sleep on the deck itself. Officers had their own berth and marines usually had a straw mattress. The galley was in the hold on warships and under the forecastle aboard merchants. It was bricked and copper clad to minimize fire risk. Before going into battle, the whole ship had to be thoroughly drenched in water, inside and out (at sea the ships were cleaned the same way: the salt water worked very well), and just before battle a bucket of water was placed with each gun and at many strategic locations. Those didn't help much if the enemy managed to get incendiaries aboard. These 'stink pots' and 'curse pots' often had three handles to give them a proper swing. The navy had specialists to prepare these weapons; in 1623 for example, it employed a petardier who could blow the transom clean off a ship. To hide and to

Type	Calibre	Point blank	Weight	Length
	in (mm)	ft (m)	lbs (kg)	ft (m)
48-pdr	7.5 (190)	1,250 (380)	7,700 (3,500)	2.5 (3.8)
48-pdr drake	7.5 (190)	550 (170)	4,400 (2,000)	7.7 (2.3)
36-pdr	7.0 (175)	1,000 (300)	6,000 (3,250)	9.5 (2.9)
36-pdr drake	7.0 (175)	500 (150)	3,200 (1,450)	5.8 (1.8)
24-pdr	6.0 (150)	1,000 (300)	4,800 (2,200)	1.3 (3.4)
24-pdr drake	6.0 (150)	450 (140)	2,400 (1,100)	7.0 (2.1)
12-pdr	4.8 (120)	750 (230)	3,500 (1,600)	9.8 (3.0)
12-pdr drake	4.8 (120)	350 (105)	1,200 (550)	6.0 (1.8)
6-pdr	3.8 (95)	1,000 (300)	2,200 (1,000)	0.8 (3.3)
6-pdr drake	3.8 (95)	250 (75)	650 (300)	5.0 (1.5)
3-pdr	3.0 (75)	750 (230)	1,200 (550)	6.5 (2.0)
3-pdr drake	3.0 (75)	100 (30)	300 (150)	4.0 (1.2)

Basic specifications of the Republic's standardized arsenal of bronze guns; data from period sources with some extrapolation. E.g. the 48-pdr drake aboard *Wapen van Delft* used 10lb (5kg) of gunpowder per shot. 'Point Blank' is the range without elevating or depressing the gun. Ships were instructed to depress their guns when boarding or being boarded (e.g. San Vicente de Cañete, 1615), or when passing the enemy in line of battle (e.g. Cuba, 1638), in order to hit the enemy below the waterline for immediate result. The first Dutchman to circumnavigate the world, Olivier van Noort, sank a Spanish vessel off Manila (Philippines) in 1600 by ordering his biggest gun be pulled in, its rear raised and then fired through the ship's own side to hit the enemy below the waterline.
(Author's table)

Guns might fire eight to ten times in an hour, smaller-calibre breechloaders perhaps at a higher rate, but only musketeers were able to maintain a continuous fire of one shot every one or two minutes. If they were army-trained they would do so in rolling volleys: not very destructive, but aimed and thus just as deadly. (Vroom, 1614, SM)

protect against small arms fire, heavy cloth (often red) was fixed around the bulwarks and tops. The latter were manned by sharpshooters, and also held water buckets to extinguish sails, and incendiaries to set the opponents' alight. Lower sails were partly raised to improve view and working space, and yards were securely fastened with chains around the mast to prevent them from crashing down. Below decks everything was stowed. The master gunner parcelled out powder, cartridges and balls, filled water bags, and unlocked the gun ports, so all guns could be pushed out as soon as the captain gave the order. Gunners received their equipment (ladle, sponge, rammer, scraper, pricker and powder horn), and hand weapons to defend against boarders. One of the crew's quarters was appointed as the boarding party and readied themselves. The carpenters readied wooden plugs, lead sheets etc. to repair holes as soon as they appeared (even lowering themselves

Hardly any drakes are left. This one is a VOC 3-pdr, only around 4ft (1.2m) long. The drake was a shortened lightweight gun type, invented by Maurice of Nassau. Its secret was the reduced-size chamber, usually concave, to ensure that a smaller amount of gunpowder was used than in the traditional barrel for the same calibre. The smaller load meant the gun had to endure less pressure and heat, so its shorter and thinner barrel could cope. It had to be made of bronze though, and its long range suffered, but not its broadside effect: for the weight of a 24-pdr, a ship could now take a 48-pdr gun. (RM)

on a platform outside the vessel during battle). The captain (not so often in full armour any more) would position himself on the poop deck, give a short speech, and then a toast was made. After this the trumpeter would play the *Wilhelmus* (today's national anthem) and then battle could commence.

Ordnance

Drakes were common, for all calibres, and regularly disembarked to support marines. Their design was carefully kept secret for many years. The heavy-calibre guns aboard the Nassau Fleet, which sailed to South America and Asia in the early 1620s, consisted of regular 12-pdr, 18-pdr and 24-pdr guns, and of 24-pdr and 48-pdr drakes. The 48-pdr drake – interestingly so far found in 1620s ships – weighed as much as a regular 24-pdr, which was the biggest calibre in practically all other Dutch warships. From the late 1620s, ships started to carry 36-pdr drakes, even aboard frigates. Small-calibre 1-, 2- and 3-pdr drakes were also used, probably as swivel guns, which would be mounted only in hostile areas. In 1643 the government set down minimum size and armament requirements for the cruiser fleet charters. The VOC had been regulating guns since 1630: its big ships should have 24 iron and

F *ORANGEN*

The *Orangen* (Orange), a late-war East Indiaman, or transom return ship as they were called. It made nine return trips from 1643. The VOC built its large fleet using just a few standard designs. This one was of the largest charter: 1,200dwt, 170ft (52m) by 38ft (12m), and 76 guns (28 18-pdr, 28 12-pdr, 12 6-pdr). Just like the Spanish treasure fleets, these would sail back from the Dutch East Indies in impregnable convoys. Because they were big, solidly built of the best wood, and armed with a considerable number of guns, they were the navy's first choice if it needed more ships. The *Orangen* was one of those: it met its end at Lowestoft on 13 June 1665, where it carried 400 men into battle and played a heroic, key role. Here it flies the flags of its owner, the Zeeland chamber of the VOC, hence the 'Z' in the VOC emblem. (Based on drawings by Herbert Tomesen.)

The white colour of the lower hull is its doubling, an extra layer of wood, metal and chemicals to protect the hull from the wood-eating worms in warmer climates, which could turn any hull into a sponge in a single journey. The second layer of wood was cheap pine, added horizontally (i.e. not following the lines of the ship). Tarred cow hair was put between the two layers and all of this was fixed with big-headed nails (only four fit into a square inch). These heads would rust and fuse together, 'rust'-cladding the hull, with a layer of cheap food underneath for those worms that made it through. Finally the whole was smeared with a mixture of rosin ('Greek pitch'), whale oil and sulphur, creating the off-white colour. Doubling was never done above the waterline, because the wood underneath would deteriorate. To prevent a ship's wood from rotting, it was cleaned with salt water as often as possible. Sometimes after each leg but certainly after every return trip the doubling was removed and renewed.
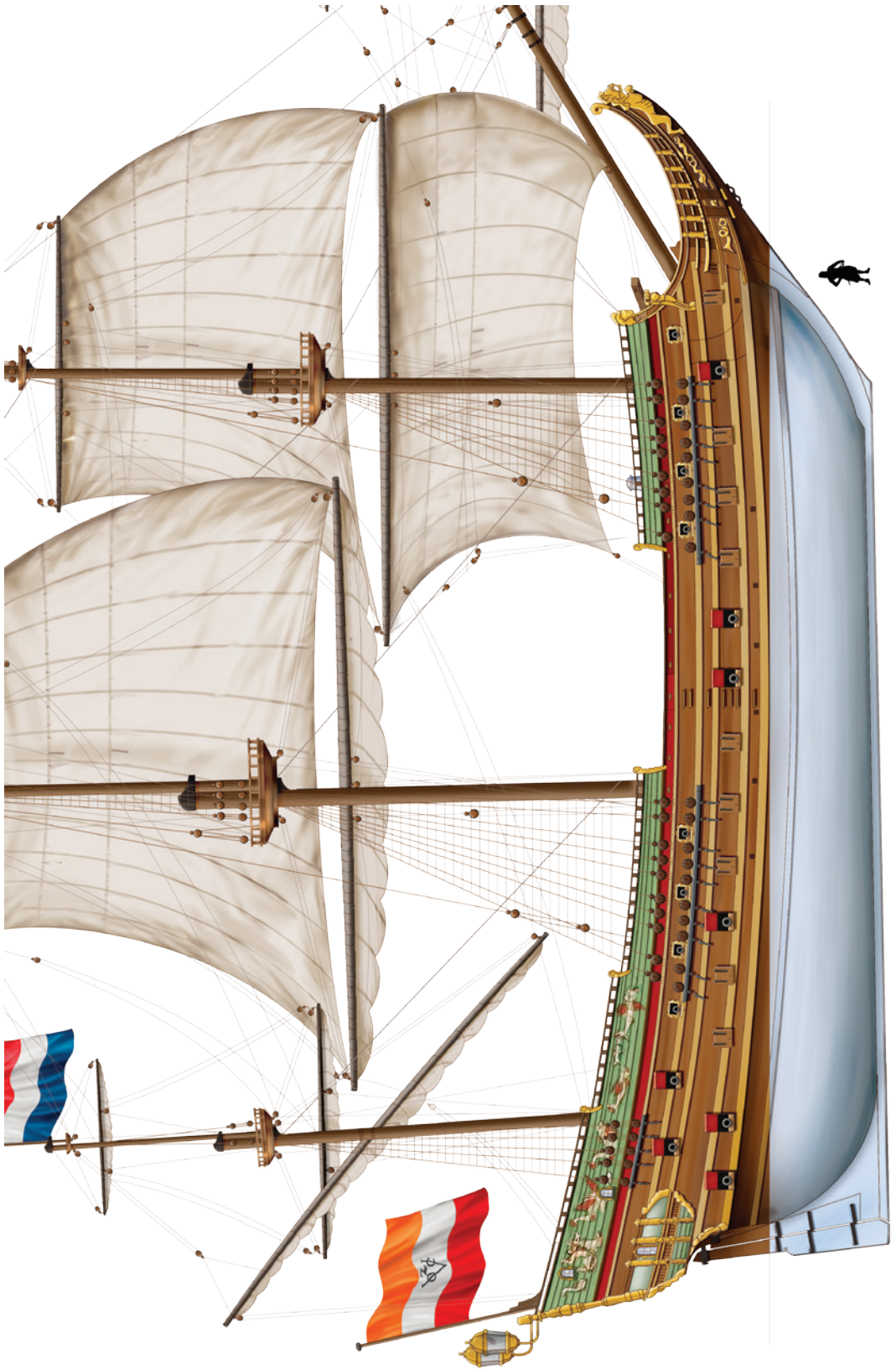
six bronze heavy-calibre guns (24- or 18-pdr), and two iron and six bronze light-calibre. Medium-sized ships needed 20 iron and four bronze heavy-calibre guns plus four small-calibre, and the small ships 16, four and two respectively. Two years later more detailed regulations for the VOC yachts were published: the large ones (120ft or 40m) needed 12 iron 5- or 6-pdr guns and the small ones (100ft or 33m) eight iron 3- or 4-pdr guns. Before a VOC ship sailed, its armament would be inspected.

A ship's heavy-calibre guns were on the lowest gun deck, and this sometimes meant they couldn't be used, like on the late war double-decker when heeling too much, or when the ship was heavily laden (the reason the Nassau Fleet avoided contact when it had just departed). Guns could fire eight or maybe ten shots in an hour at most, after which they needed to cool down for an hour. Effective range was perhaps 750ft (250m), although point-blank range – how far the ball would travel in a straight line, i.e. without adjusting gun elevation – was just 200–300ft (75–100m). It was common to carry twice as many balls as gunpowder charges. VOC ships had to take along 50 assorted shots per gun. About 90 per cent of those would be solid, the rest bar, expanding bar, cudgel, crossbar, chain, grape (billiard-sized balls in a bag) or canister (filled with musket balls). Most of these special ammunitions were used by smaller calibres. Powder loads were put into ready-to-use thick paper cartridges, stored in chests. It was common to set sail with loaded guns, i.e. cartridges wedged in the barrels, which were closed with a watertight cork, or in larger calibres a wooden plug. The touchholes too were closed. Every two to three months the cartridges were removed (or used for practice) and replaced with fresh ones. Every gun had a fixed team and commander, so everybody knew where to go immediately. The ships of the Nassau Fleet were ordered to place a sufficient number of balls with each gun and prepare 20 to 25 cartridges per gun and put all of these below the waterline in three equal-sized stores, so nobody would have to enter the powder room during battle.

In Action

One reason the frigate became popular and inspired a whole generation of big warships, was the growing belief that the strategy of blockading Flemish ports was ineffective compared to cruising and actively hunting the enemy. The VOC used the same blockade strategy in India though, and with success, despite the blockade being 4,000 miles from its HQ: between 1637 and 1644, it sent nine blockade fleets to Goa, the largest being 19 ships and 2,000 men. At the same time the VOC also cruised the Malacca Straits. It seems then that success came from the combination of the two, which was probably also the case in Europe. The WIC sent small squadrons and individual ships to dislodge enemy shipping in the Caribbean. This was so profitable that they scaled it up to go after the treasure fleets. They tried for about 15 years, but succeeded only once (Bay of Matanzas, Cuba, 1628). Meanwhile it overspent itself on the war in Brazil and in the end needed the support of the Republic's navy. The VOC was much better off, thanks to some sound strategies and to the early decision to have a local power centre and ruler. To avoid boarding or close-range slaughter, ships needed to outshoot their opponent (the preferred VOC tactic), or outrun it, which led to the creation of the frigate. Interestingly the Dutch navy choose the latter, despite or because it had access to heavy-calibre, lightweight drakes. Quite often one fleet would
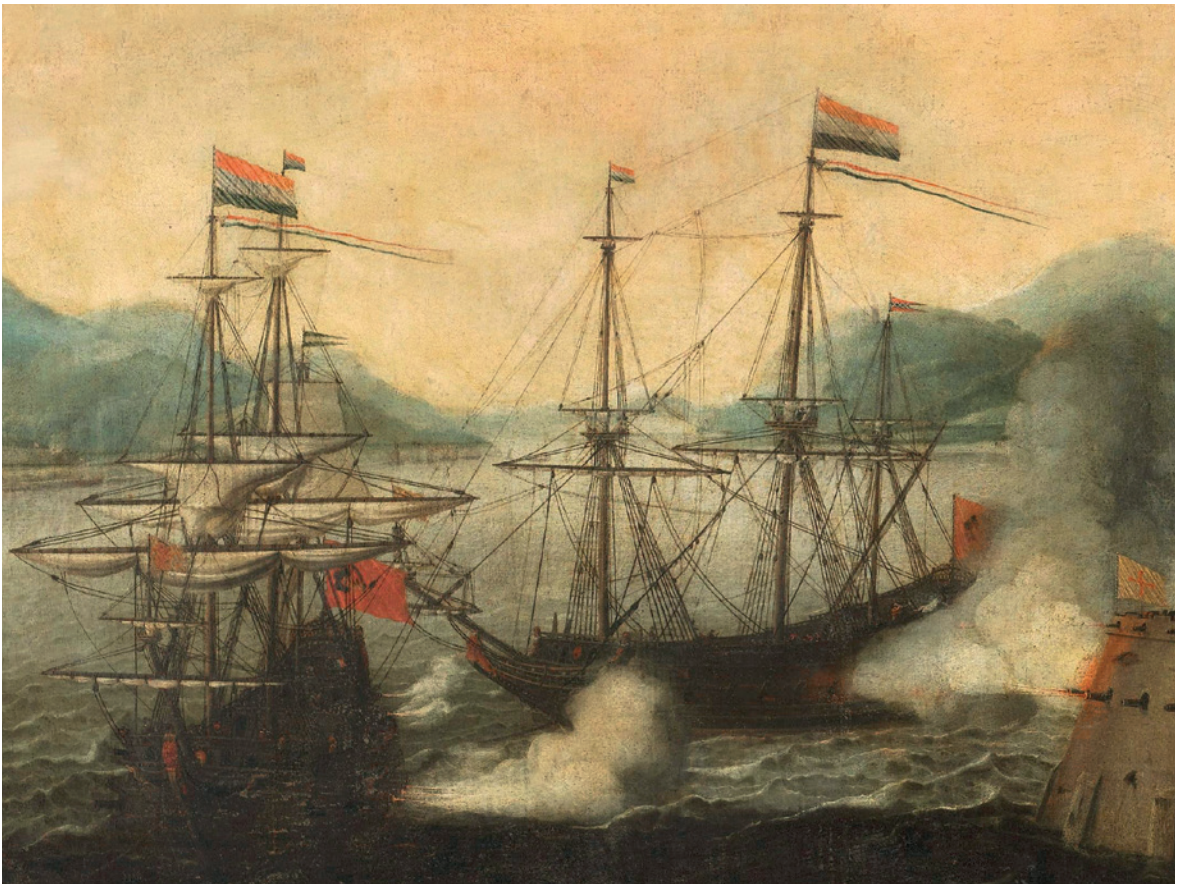
The somewhat worse for wear 1588 tapestry interpretation of the *Arcke of Delft* (Ark of Delft) as it moves to the rescue at the relief of Leiden on 3 October 1574. Two iron-clad boat hulls enclosed Captain Cret and his 50-man assault party and gunners, plus the 12-man paddlewheel which powered it. The relief operation went ahead before the inundation was deep enough for its full complement, so it set out from Delft with perhaps half of its complement. It did take part in combat around Zoetermeer. (Lanckaert, 1588, ML)

try to ambush the other to gain a momentary advantage. This usually involved boarding actions (Cape Rochado, 1606; Bay of Matanzas, 1628). If the order to board was given, any captain not executing it risked being executed himself, because he would inevitably be court-martialled. The period saw several joint operations with France (La Rochelle, 1625; Lizard Point, 1637; Grevelingen 1644 and 1646). In the first years, from 1623 to 1625, a fleet of the country's largest warships sailed around South America to Peru and on to Batavia (Jakarta). This was called the Nassau Fleet, because Maurice of Nassau was its initiator. One of its interesting engagements was the Spanish 6-pdr armed longboat fleet which attacked one of the warships at Calleo (Peru, 1624). Despite a lot of shooting, neither side was hurt: the longboats' guns were too light, and the chopping sea made the warship miss. In the last years a much larger fleet achieved another milestone. In 1644 Witte de Wit commanded 41 Dutch warships to escort a convoy of 900 merchants through the Sound (Denmark), without firing any shot and without paying any toll. A year later he repeated the feat.

ON THE FRINGES

The many rivers and lakes at home and the many islands and distant strongholds abroad, meant that the war saw a lot of amphibious warfare. The rapid technological and organizational military advancement during the war resulted in many innovations to overcome the new challenges. This was especially so during the first two decades, which saw some unique, one-of-a-kind vessels. As the military started to standardize, there was less room for such solutions, but designs and prototypes continued to be made.

Amphibious Warfare

The two most pivotal moments of the 80 Years' War were the taking of Den Briel in 1572, and the landmark victory at Nieuwpoort in 1600.
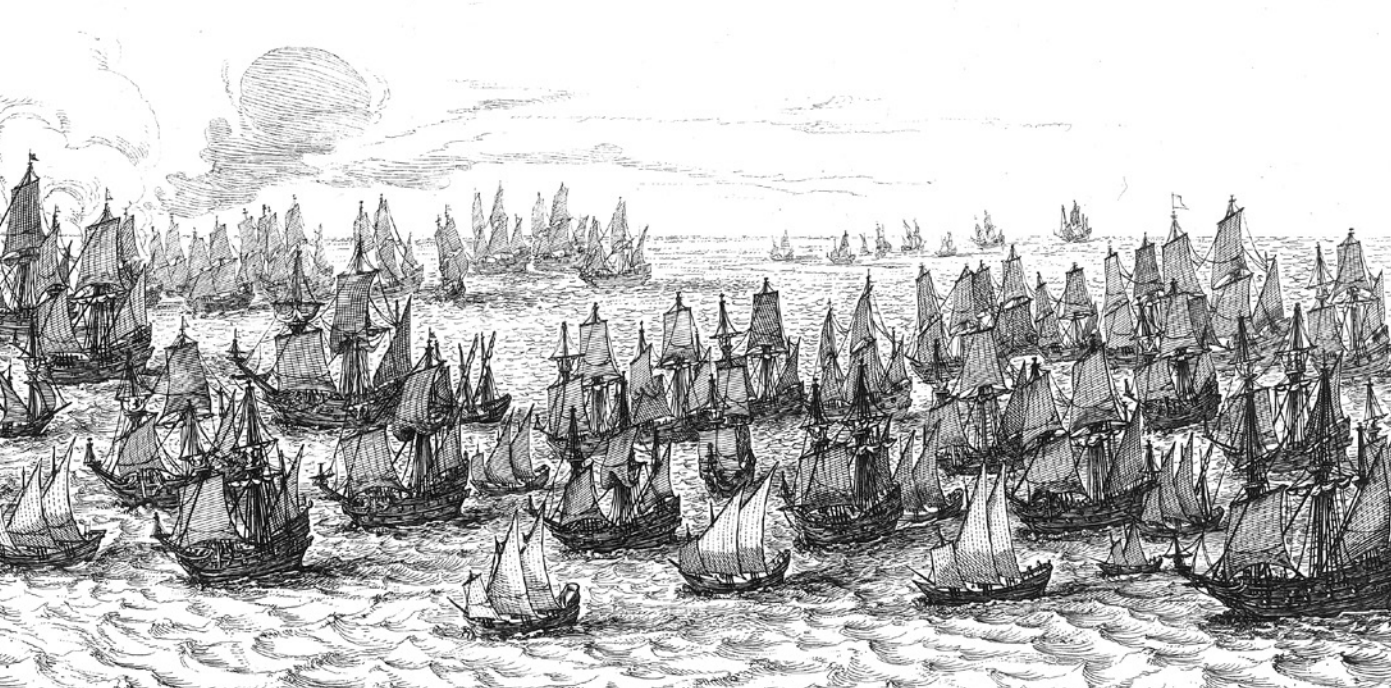
Both were the result of an amphibious operation. For the latter it was the landing at Philippine in Flanders, the biggest successful amphibious invasion before the twentieth century. Maurice of Nassau's army arrived there in a fleet of 1,450 ships. Within just two days 12,000 infantry, 2,700 horse, 2,300 support troops, artillery and equipment had disembarked. That speed was accomplished by beaching the ships, waiting for low

The five days' battle of Itacamara in Brazil in 1640. In four battles between 12 and 17 January the 33-ship Dutch WIC fleet of Admiral Willem Cornelisz Loos and Vice-Admiral Jacob Huygens (left) managed to drive off the 77-ship Spanish-Portuguese fleet. The Spanish carried 8,000 marines which were to land and take Dutch Recife. Loos was killed in the very first attack, when he cut through the defensive line of the five largest galleons (250 guns), to get his 44-gun *Faam* (Fame) to the enemy flagship. Both sides lost only two ships. On its way back the Spanish fleet got scattered and suffered dearly. (Post, 1646, RM)
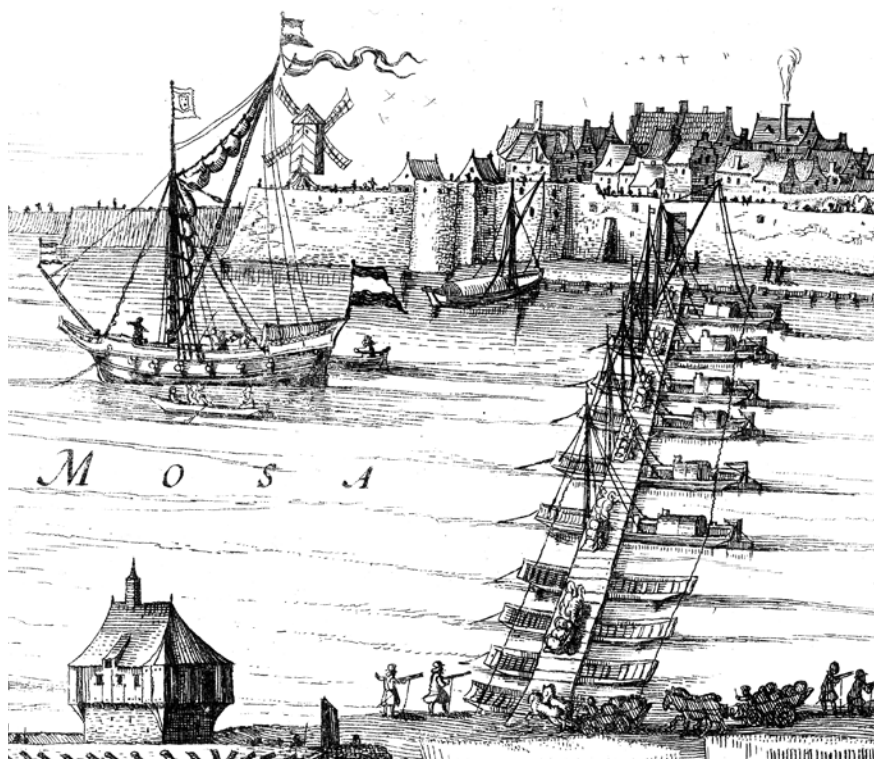
Boat bridges allowed Dutch armies to manoeuvre independently of fixed bridges. This one across the Meuse in 1622 uses the standard-sized bridging vessel for that river, 15x3ft (5x1m). On the Rhine they measured 50x10ft (15x3m). Each vessel had an armed crew of three or four and carried all the planking and materials needed. When assembled, fieldworks at both ends and a guard house in the middle would defend it. (Liefrinck, 1622, RM)

41

The allied landing at Tidore, Indonesia, in May 1605. A VOC squadron with allies from Ternate Island landed to attack the Portuguese fort on Tidore Island. Captain Jan Mol and 150 VOC marines stormed the fort twice without effect. A lucky hit from one of the bombarding ships (the *Gelderland*, of Bantam fame) blew up its gunpowder room, killing around 70. When Mol then charged again, the occupants surrendered. (Frisius, *circa* 1608, RM)

tide and then simply walking ashore. The vessels carrying horses were equipped with special ramps. The war saw many other landings: the seventeenth-century Dutch army relied heavily on its ability to use rivers and coastal waters. On campaign it used a strictly regulated 'river train', with, for example, three vessels per infantry regiment, the equivalent of 18 wagons. Accompanying each army was a bridging fleet guarded by several gunboats. Wherever possible both sides used gunboats (and gunfloats) to bombard positions and guard bridges. As the army grew, so did the 'river train': for the siege of Breda in 1637 around 5,000 spritsailed ships were needed. One of the navy's primary tasks was to support the army. Sometimes it was even ordered upriver in strength. During the Spanish invasion of 1599 for example, all the navy's sailors were ordered upriver in an assorted fleet of small vessels armed with breechloaders, with ten days of victuals.

Amphibious operations were also common far from home. Longboats would land marines to establish a bridgehead or immediately assault a position. When there was opposition, the warships bombarded the enemy strongholds. This could be done during the landing to achieve surprise

and to distract, as at Gomera (Canary Islands, 1599), so four companies could land unseen for the flank attack supporting the main landing of six companies. At other times a bombardment was meant to destroy, like Lieutenant-Admiral Maarten Tromp's line-of-battle barrage against Dunkirk (1638), or the two-day bombardment of Salvador da Bahia (Brazil, 1624), before Vice-Admiral Piet Hein himself led his men in a successful assault. Without support, landing could be bloody. When a 200-man landing party of the Nassau Fleet rowed ashore to Guyaquil (Ecuador, 1624), they lost 35 men from its shore batteries (they managed to get ashore though, with their light artillery pieces). To make a bridgehead, the men would throw up a crescent-shaped fort. Even if the position was temporary, heavy-calibre guns would be brought in, like the six 24-pdr drakes and ten lighter pieces for just a three-day water resupply at Chorrillos (Peru, 1624). To make a bigger fist, local allies would be sought. In a strategic move against Portuguese Brazil, the WIC landed 20 foot companies (including Brazilian Tupi warriors) and six guns in Angola. They then met up with the army of the local ruler, to take Luanda (1641). The VOC relied on allies even more. These used their own longboat equivalent, the *kora-kora*. Several squadrons of these were in VOC service. They were usually armed with a few swivel guns and the largest could carry 400 men.

Atypical Designs

Burners had long been a useful weapon to recycle old ships and attack big enemy ships. They were prepared with hard-to-extinguish incendiaries and sailed to their target with a skeleton crew of perhaps ten men. These would try to ram or grapple an enemy and then escape on a longboat following them. As ships became faster and more manoeuvrable, the use of burners on the open sea declined. Most burners doubled as floating bombs, hence their other nickname, 'burster'. These hardly ever exploded at the right time, but the disorder they caused from knowing they eventually would, was already enough of a weapon. One famous success was the Dutch merchant that entered Dunkirk in April 1588. Its crew set the vessel alight and slipped away. The terror caused by the explosion, and the memory of the one at Antwerp (described below), goes a long way to explaining

The other kind of landing, here in 1636 across the Rhine, during the long and bloody siege of the Schenkenschans, a peninsular fort on the Dutch-German border. (Santen, *circa* 1640, RM)

43

why the Armada panicked when they were attacked by burners during the actual battle. At the siege of Antwerp in 1585 the rebels used burners, but also a 'floating mine'. Its function was to destroy, not to terrorize. Called *Hoop* (Hope), it contained 7,500 or 18,000lb (3,800 or 9,000kg) of gunpowder in a fire- and bullet-proof room, triggered by a mechanical clock. It was powered by a sail held underwater, to catch the tide's current. When it reached its target, a fortified bridge, it exploded with such force that almost a thousand men were obliterated. The shockwave shattered all the windows in Ghent, 11 miles (17km) away. That siege saw two other unique vessels: submerged ships using the river's tidal current to ram the bridge, and the iron-clad *Fin de la Guerre (*End of War), an armoured gun battery to bombard the bridge to smithereens (it ran aground before getting there). A more advanced approach, a paddle-wheeled iron-clad assault craft, was tried at the relief of Leiden in 1574: the *Arcke van Delft* (Ark of Delft) consisted of two hulls tied together. Fifty years later Cornelius Drebbel tried out his 'torpedoes', a kind of submerged petard, either floating along or based on his proven but otherwise ignored submarine design. At La Rochelle (1625) they did find their mark, but the resulting explosions were disappointing. Four years later they seem to have been used against the VOC, again without success. John Leeghwater's submarine invention – probably based on a diving bell – sparked Maurice of Nassau's interest, but was never adopted.

CONCLUSION

Under William the Silent, the Dutch navy secured the Republic's home waters. Under Maurice it brought the war to the enemy and went out to put the Republic's stamp on the world. Under Frederick Henry it consolidated the Republic's new-found position. Over these 80 years the big, strong but slow merged with the small, fast but weak into efficient navy ships, good at both sailing and fighting. Not long after the war the navy finally turned into a standardized, state-owned military fleet. The introduction of

G **KORA-KORA**

A *kora-kora* from the 1630s Dutch East Indies. These shallow-draft sailing vessels had two decks with warriors, a couple of swivel guns, outriggers, and peddlers on both sides, either along the hull on boards sticking out the sides, or two rows on each widened outrigger. Sometimes the two were combined to form very wide plateaus on either side, so more troops could be carried. Bigger royal ships might have double twin-rows on both outriggers and much wider decks. For battle, the sail, masts and roofing would be removed. Stable, shallow drafted and full of warriors, they were ideal to police the region, at sea and on land. Roughly, for every 1,000 inhabitants there was one *kora-kora*. Local law obliged every man to serve for a short time every year on a *kora-kora*. These would gather in war fleets called '*hongi*'. Local rulers and the VOC would join forces against enemy alliances, like the 1605 war of Ternate and VOC versus Tidore & Portugal.

When the VOC took over leadership of an island, it continued the *hongi* practice. Most of its rowers were Christian Ambonese, who had pledged loyalty to the Dutch in 1605. The first annual *hongi* under VOC control was in April 1607. From then on the *hongi* was part of the VOC fleet, used separately or together with VOC ships. In 1625 for instance, a fleet of *kora-kora* joined the Nassau Fleet to land 1,000 Ambonese warriors and 800 VOC soldiers on Hoamoal and assault the mountain stronghold of King Leliato. Around 1630 the VOC stepped up compulsory service in the *hongi* better to counter the increasing number of traders from Makassar that came searching for cloves. In 1637 this led to riots. It was then agreed to limit *hongi* service to five weeks per year per person.
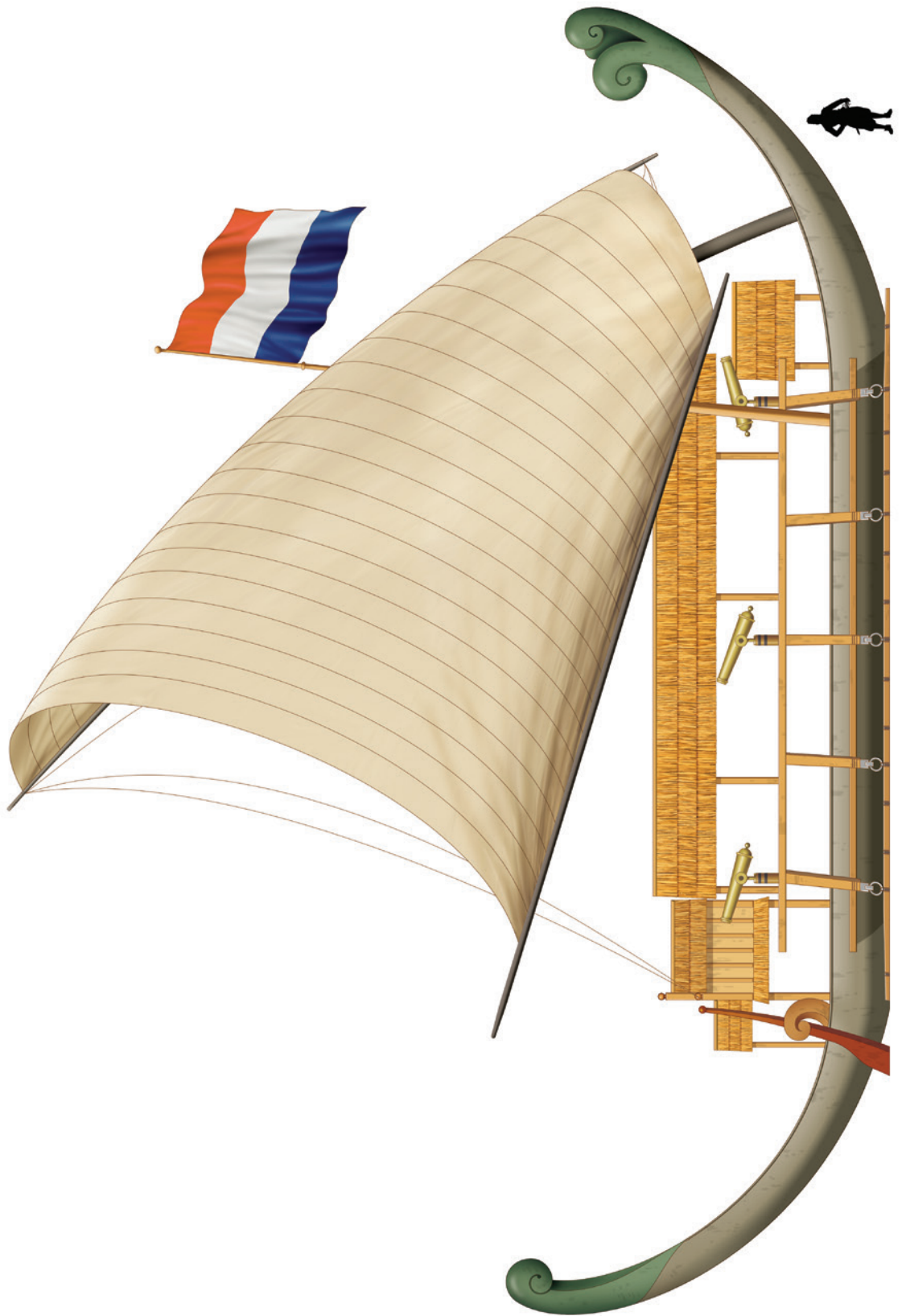
A VOC fleet returns on 7 August 1648, commanded by Wollebrant de Jongh. What the navy couldn't, the VOC did: build ships according to standard designs, and big ones at that, at a rate of one every two months. The largest charter was a 76-gun, 1,000dwt, 170ft (52m) design. Shown here are several of these, with the *Orangen*, the subject of plate F, in the centre. (Beeckman, 1650, MA)

the drake around 1620 resulted in considerable cost and weight savings, while increasing the weight of a ship's broadside. Naval line-of-battle tactics matured during this period. The Spanish–Portuguese tactic of a defensive line of battle was quite common (Gibraltar, 1622; Itacamara, 1640; etc). In 1602 VOC admiral Wolfert Harmensz was the first to use a line of battle to defeat one, at Bantam (Indonesia). Before the end of the war, lines became a common way to concentrate firepower, with ships touching bowsprit to stern, like under navy admiral Maarten Tromp at Dunkirk (1638) and The Downs (1639). WIC admiral Cornelis Jol seems to have been the first to 'cross the T', i.e. cut a line with a line, at Havana (Cuba, 1638). He also ordered his fleet to aim below the enemy water line, another common Dutch tactic. Like the army, the navy transformed from a medieval to a modern fighting force during the long 80 years of war. This 'professionalization' of the sailing navy occurred later than in the army, but perhaps because of that developed towards a similar tactical doctrine: battle lines that needed to

Year	Flagship	Dwt	Guns, up to		Admiral	Operation
1576	known as the Great Hulk	1,200	40	18/24-pdr	Louis de Boisot, KIA	Zierikzee
1599	Hollandse Tuin	1,000	44	18/24-pdr	Pieter van der Does	Canary Islands
1601	Gelderland	520	20	18-pdr ?	Wolfert Harmensz	Bantam (proto-VOC)
1607	Aeolus	< 500	30 ?	18-pdr ?	Jacob van Heemskerk, KIA	Gibraltar
1625	(Wapen van) Delft	850	44	48-pdr	Huigen Schapenham *	Nassau Fleet
1628	Amsterdam	1,000	50	48-pdr	Piet Hein (Capt.: De Wit)	Bay of Matanzas (WIC)
1629	Groene Draeck	480	26	36-pdr	Piet Hein, KIA (Capt.: Tromp)	Dunkirk
1638	Salamander	600	44	48-pdr ?	Cornelis Jol	Havana (WIC)
1639	Aemilia	600	57	36-pdr	Maarten Tromp	The Downs
1645	Brederode	600	51	36-pdr	Witte de Wit	The Sound blockade run
1648	Orangen	1,200	76	24-pdr	Wollebrant de Jongh	a return fleet (VOC)

* Vice-admiral (Capt.: De Wit). Admiral Jacques l'Hermite's flagship was the 800dwt, 42-gun Amsterdam (not the 1628 one).

be pierced, proper reserves, uniform orders and equipment, and firepower instead of melee. It was only thanks to its navy that the seven rebel provinces were able to become a global superpower.

FURTHER READING

The complete, mostly Dutch, and growing bibliography is available on www.80yw.org.

Anderson, R.C., *Rigging of Ships in the Days of the Spritsail Topmast, 1600–1720* (Dover, New York, 1927, reprinted 2012)

Bender, J., *Dutch Warships in the Age of Sail 1600–1714: Design, Construction, Careers and Fates* (Seaforth Publishing, Barnsley, 2014)

Bruijn, J.R., *Dutch Navy of the Seventeenth and Eighteenth Centuries* (History Association, St. John's, 2017)

Heyning, K., *Zeeland Tapestries* (Zeeuws Museum, Middelburg, 2007)

Lehmann, L.T., *Galleys in the Netherlands* (Meulenhoff, Amsterdam, 1984)

Puype, J.P., 'Guns and their handling at sea in the 17th century: A Dutch view', *Journal of the Ordnance Society* II (1990), pp11–23

Trim, D.J.B. and M.C. Fissel (eds.), *Amphibious Warfare 1000–1700* (Brill, Leiden, 2006)
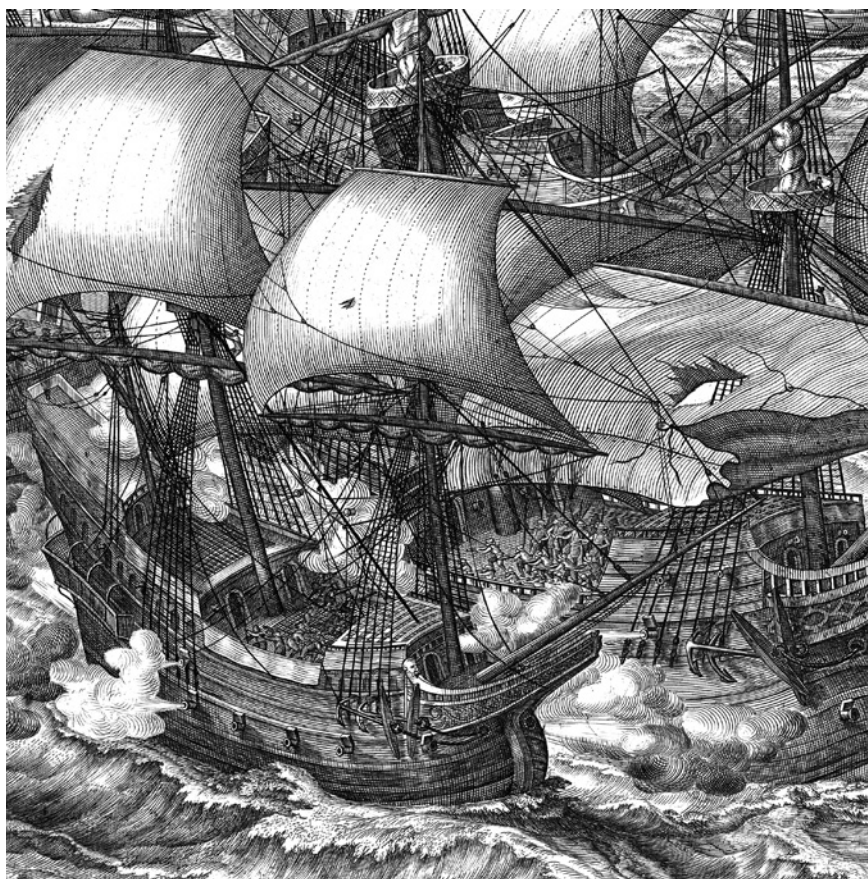
On 2 January 1602, two lines of battles met for the first time. It was the fifth day of the battle of Bantam, between a Dutch Old Company fleet, a VOC precursor (three warships, two yachts), and a Portuguese fleet (eight galleons, four galleys, six smaller ships). During the first days, the Portuguese were outmanoeuvred and outfought. On this last day they formed line of battle to engage the Dutch, by shooting and veering away one by one, their customary tactic. This day, however, Dutch Admiral Wolfert Harmensz aboard his 520dwt *Gelderland* ordered his fleet to form line astern as well. The Dutch attacked the other line head-on and outgunned it. Out of options and already having lost five ships, the Portuguese left, thereby conceding their pepper monopoly. (Anonymous, 1608, RM)

INDEX

Page numbers in **bold** refer to illustrations and their captions

ACKNOWLEDGEMENTS

AUTHOR'S NOTE

Throughout most of the war, the Dutch classified their ships by their *last* (load), or how much cargo a ship could carry. The closest modern equivalent is deadweight tonnage, abbreviated to dwt. Strictly speaking deadweight is much more than just a ship's cargo. It also includes fuel, provisions, ballast, crew and passengers. However, back then crews were small, the weight of their provisions insignificant compared to total cargo capacity, the ships carried no fuel, and ballast and cargo were interchangeable. In other words, for these old vessels, deadweight tonnage and *last* measure the same. To make them more comparable to today's ships, I will therefore use dwt instead of *last* throughout the text, with 2dwt the equivalent of 1 *last*, e.g. a 400-*last* ship will be referred to as a 800dwt ship.

TITLE PAGE IMAGE

Probably Amsterdam Admiralty's new warship *Fortuna*, one of several big warships built and bought by the Dutch in the 1590s. (after Barendsz, 1594, RM)

COVER

Zeeland's Vice-Admiral Laurens Jacobsz Alteras on the *Rode Leeuw* (Red Lion) during the battle of Gibraltar in 1607. It has just passed its designated opponent. The crew is working hard to quickly turn the ship, taking in sail and dropping anchor. Alteras was killed during another battle of Gibraltar, in 1622. Also see detail on page 25. (Wieringen, 1622, SM)